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Duke Energy Indiana

The Duke Energy Indiana
2011 Integrated Resource Plan

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Integrated Resource Plan – Abbreviations

Activated Carbon Injection	ACI
American Clean Energy and Security Act	ACES
Architecture and Engineering	A&E
Association of Edison Illuminating Companies	AEIC
Best Available Control Technology	BACT
Behind the Meter Generation	BTMG
Carbon Dioxide	CO_2
Certificate of Public Convenience and Necessity	CPCN
Clean Air Act	CAA
Clean Air Act Amendments	CAAA
Clean Air Interstate Rule	CAIR
Clean Air Mercury Rule	CAMR
Clean Air Transport Rule	CATR
Clean Energy Legislation	CES
Coal Combustion Residuals	CCR
Combined Cycle	CC
Combustion Turbines	CTs
Compact Fluorescent Light bulbs	CFL
Compressed Air Energy Storage	CAES
Consumer Price Index	CPI
Cross State Air Pollution Rule	CSAPR
Demand Response	DR
Demand Side Management	DSM
Duke Energy Indiana	Duke Energy
Duke Energy Indiana	The Company
Electric Power Research Institute	EPRI
Electronically Commutated Fan Motors	ECM
Energy Efficiency	EE
Environmental Protection Agency	EPA
Federal Energy Regulatory Commission	FERC
Flue Gas Desulphurization	FGD
Generating Availability Data System	GADS
Gigawatt-Hours	GWH
Greenhouse Gas	GHG
Hazardous Air Pollutant	HAP
Heating, Ventilation and Air Conditioning	HVAC
Heat Recovery Steam Generator	HRSG
Indiana	IN
Indiana Department of Environmental Management	IDEM
Indiana Municipal Power Agency	IMPA
Indiana Utility Regulatory Commission	IURC
Information Collection Request	ICR
Installed Capacity	ICAP
Integrated Gasification Combined Cycle	IGCC
Integrated Resource Plan	IRP
Integrated Resource Plan	The Plan
Joint Transmission System	JTS

Integrated Resource Plan – Abbreviations

Kilowatt	KW
Kilowatt-Hours	KWH
Load, Capacity, and Reserve Margin Table	LCR Table
Load Serving Entity	LSE
Loss of Load Expectation	LOLE
Low NO_x Burners	LNB
Maximum Achievable Control Technology	MACT
Maximum Net Dependable Capacity	MNDC
Megawatt	MW
Midwest Independent Transmission System Operator, Inc.	MISO
National Ambient Air Quality Standards	NAAQS
National Oceanic and Atmospheric Administration	NOAA
National Pollutant Discharge Elimination System	NPDES
North Carolina/South Carolina	NC/SC
Net Present Value	NPV
New Source Performance Standard	NSPS
New Source Review	NSR
Nitrogen Oxide	NO_x
North American Industry Classification System	NAICS
Nuclear Regulatory Commission	NRC
Ohio/Kentucky	OH/KY
Operation and Maintenance Costs	O&M
Other Public Authorities	OPA
Particulate Matter	PM
Parts Per Billion	PPB
Personalized Energy Report	PER
Planning Reserve Margin	PRM
Planning Resource Credit	PRC
Present Value Revenue Requirements	PVRR
Prevention of Significant Deterioration	PSD
Pulverized Coal	PC
Purchase Power Agreement	PPA
Renewable Energy Certificates	REC
Renewable Energy Portfolio Standard	REPS
Research, Development and Delivery	RD&D
Resource Conservation Recovery Act	RCRA
Rural Electric Membership Cooperatives	REMC
Selective Catalytic Reduction	SCR
Selective Non-Catalytic Reduction	SNCR
Short Term Implementation Plan	STIP
State Implementation Plan	SIP
Sulfur Dioxide	SO_2
Technology Assessment Guide	TAG
Third Party Administrator	TPA
Unforced Capacity	UCAP
Wabash Valley Power Association, Inc.	WVPA
Equivalent Forced Outage Rate Excluding Events Outside of Management Control	$XEFOR_d$

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1. EXECUTIVE SUMMARY

A. OVERVIEW

Duke Energy Indiana (Duke Energy or the Company) is Indiana's largest electric utility, serving approximately 782,000 electric customers in 69 of Indiana's 92 counties covering North Central, Central, and Southern Indiana. Its service area spans 22,000 square miles and includes the cities of Bloomington, Terre Haute, and Lafayette, and parts of the suburban areas near Indianapolis; Louisville, Kentucky; and Cincinnati, Ohio.

The Company has both a legal obligation and a corporate commitment to meet the energy needs of its customers in a way that is reliable and economic. Planning and analysis helps the Company achieve this commitment to customers. Duke Energy Indiana utilizes a resource planning process to identify the best options to serve customers' energy and capacity needs in the future, incorporating both quantitative analysis and qualitative considerations. For example, quantitative analysis provides insights on future risks and uncertainties associated with the load forecast, fuel and energy costs, and renewable energy resource options. Qualitative perspectives, such as the importance of fuel diversity, the Company's environmental profile and the stage of technology deployment are also important factors to consider as long-term decisions are made regarding new resources. The end result is a resource plan that serves as an important tool to guide the Company in making business decisions to meet customers' near-term and long-term energy needs.

The overall objective of the resource planning process is to develop a robust and reliable economic strategy for meeting the needs of customers in a dynamic and uncertain environment. Uncertainty is a critical concern and plays a significant role in the planning process when dealing with factors such as emerging environmental regulations, load growth or decline, and the pricing of fuel and market products.

Major changes in the Company's 2011 Integrated Resource Plan (IRP or the Plan) from the 2009 Resource Plan are outlined below:

- COMPLIANCE WITH NEW EPA REGULATIONS -

  The recently proposed United States Environmental Protection Agency (EPA) Utility Boiler Maximum Achievable Control Technology (MACT) Rule creates emission limits for hazardous air pollutants (HAPs), including mercury, acid gases, and other metals from coal-fired and oil-fired power plants is expected to result in the retirement of the 668 MW Wabash River Generating Station (Units 2-6) by January 1, 2015. The rule is expected to be finalized in November 2011, with an initial compliance date on or near January 1, 2015. Additional emerging environmental regulations that will contribute to the Company's retirement decisions include the Cross State Air Pollution Rule (CSAPR), new water quality standards, fish impingement and entrainment standards, the Coal Combustion Residuals (CCR) rule and the new Sulfur Dioxide (SO_2), Particulate Matter (PM) and Ozone National Ambient Air Quality Standards (NAAQS).

  New environmental controls are expected at Cayuga, Gibson and Gallagher to meet the requirements of these rules. Until these rules are finalized it is difficult to predict the exact requirements but an estimate of expected control requirements was developed for planning purposes. The projected increased capital and operation and maintenance expenditures along with the operational changes associated with these controls were included in the analysis. As the rules are finalized in 2011 and 2012 the Company will develop a detailed strategy and seek regulatory approval through the Certificate of Public Convenience and Necessity (CPCN) for Clean Coal Technology and under the Utility Generation and Clean Coal Statutes.

- PURCHASE OF 400 MWS OF THE VERMILLION COMBUSTION TURBINE (VERMILLION CT) STATION AND RETIREMENT OF GALLAGHER UNITS 1 AND 3 -

  Under the New Source Review (NSR) Consent Decree reached with the United States concerning Gallagher Station, the Company agreed to either retire Units 1 and 3 (280 MW) by February 1, 2012, or convert the units to natural gas by January 1, 2013. The Consent Decree requires Duke Energy Indiana to make a final decision by

January 1, 2012. The Company had originally planned to convert the units to natural gas, as detailed in Cause No. 43956. However, in mid 2011, Wabash Valley Power Association, Inc. (WVPA) and Duke Energy Indiana signed an agreement to jointly purchase Duke Energy Vermillion's 75% share of the 640 megawatt (MW) Vermillion CT Plant located in Vermillion County, Indiana.[1] In Cause No. 43956, which is currently pending before the Indiana Utility Regulatory Commission (IURC), Duke Energy Indiana requested approval of either the Vermillion acquisition or, alternatively, the conversion of Gallagher Units 1 and 3 to natural gas. A decision in this case is anticipated in time to meet the January 1, 2012 decision date in the Consent Decree. If approved, the Vermillion CT acquisition would be completed in early 2012 and Gallagher 1 and 3 will be retired February 1, 2012 in compliance with the Consent Decree.

- LOWER NATURAL GAS PRICE FORECAST -
  The fundamental price forecast for natural gas has decreased primarily due to increasing expectations of economically available domestic supplies of the fuel located in shale deposits. The expanding potential of this new supply coupled with the slow economic recovery have lowered the projected fundamental natural gas price for the foreseeable future and has impacted the technology selection to meet future electricity needs.

- HIGHER ENERGY EFFICIENCY PROJECTIONS -
  Although Duke Energy Indiana has a long history associated with the implementation of energy efficiency (EE) programs, the amount of planned energy efficiency consisting of conservation and demand response (DR) programs has increased significantly. Energy efficiency programs called "Core Programs" were created as mandated by the Commission's Order in Cause No. 42693 (Phase II). These programs are to be implemented by an independent third-party administrator. In addition to these Core Programs individual electric utilities were instructed to offer

[1] WVPA currently owns 25% of the Vermillion Plant. Assuming the acquisitions receive all required regulatory approvals, the final ownership shares of the entire Plant will be 62.5% for Duke Energy Indiana and 37.5% for WVPA (undivided ownership interest, as tenants in common).

additional energy efficiency programs called "Core Plus Programs."[2] The combination of these two programs doubled the projected conservation energy savings by 2015 as compared to the 2009 projections. The number of projected demand response participants is also projected to increase over the next several years. By 2015 the peak demand is projected to be reduced by more than 200 MW from the 2009 projections due to this increase in demand response and conservation programs.

- RENEWABLE ENERGY PLANNING ASSUMPTIONS –

  In 2009 a renewable portfolio standard was thought to be imminent based on proposed legislation being considered in the United States Senate and House of Representatives. The planning assumption in the 2009 IRP was a 3% renewable requirement starting in 2011 increasing to 15% by 2029. However, for the 2011 IRP, Duke Energy Indiana's plans regarding renewable energy resources are based primarily upon the assumption that renewables will become a gradually-increasing component of the Company's generation mix within the state. For planning purposes, the Company has assumed that a generic legislative requirement will be imposed within the planning period at either the state level or the federal level, and that this requirement will drive the development of renewable resources over time. Specifically, the Company has assumed that it would meet a renewable requirement equal to 1% starting in 2016 increasing to 10% of retail sales by 2025 including the existing Benton County Wind Farm but not including the Markland Hydro facility. The 2010 retail sales requirement of 10% is consistent with the voluntary renewable standard proposed in Indiana Senate Bill 251.

- UNCERTAINTY IN A CARBON CONSTRAINED FUTURE –

  In 2007 through 2009, there were multiple greenhouse gas (GHG) cap and trade legislative proposals put forth in Congress, with one bill, The American Clean Energy and Security Act of 2009 (H.R. 2454), passing the House of Representatives in June 2009. There currently appears to be no momentum in Congress to consider GHG legislation, at least through 2012. Although the Company continues to believe that

[2] Duke Energy Indiana's proposal is currently pending before the Commission in Cause No. 43955.

Congress will eventually adopt some form of mandatory GHG emission reduction or clean energy legislation, the timing and form of any such legislation remains highly uncertain. In the absence of federal GHG or clean energy legislation, the EPA continues to pursue GHG regulations on new and existing units. The impact of future EPA regulations is uncertain at this time; however the Company believes that it is prudent to continue to plan for a carbon-constrained future. To address this uncertainty, the Company has evaluated portfolios under both a carbon dioxide (CO_2) cap-and-trade regulatory construct and a clean energy standard regulatory construct.

- CHANGES IN THE PROJECTED LOAD FORECAST-
  Between 2009 and 2011 the total energy and peak capacity need for Duke Energy Indiana decreased primarily due to recessionary impacts. Generally, the 2011 energy and peak demand forecast is slightly higher than the 2009 forecast however, in its current load forecast the Company does not project reaching 2007 levels of sales and peaks until the 2015 timeframe.

An overview of the resource plan is presented on the remaining pages of the Executive Summary. Further details regarding the planning process, issues, uncertainties, and alternative plans are presented used in the specific sections of the IRP. For further guidance on the location of information required pursuant to compliance with the Commission's IRP Rules, please refer to the cross-reference table in Appendix H.

B. PLANNING PROCESS RESULTS

To address the numerous uncertainties, the Company believes the most prudent approach is to create a plan that is robust under various future scenarios. At the same time, the Company must maintain its flexibility to adjust to evolving regulatory, economic, environmental, and operating circumstances.

Even with the acquisition of the Vermillion CT Plant and completion of the Edwardsport Integrated Coal Gasification Combined Cycle (IGCC) project, Duke Energy Indiana projects the need for additional resources in 2015. This is driven primarily by the anticipated retirement of Wabash River Units 2 through 6 and Gallagher Units 1 and 3. The summer Maximum Net Dependable Capacity (MNDC) of these units is 948 MWs and represents approximately 14% of the Duke Energy Indiana generation resources.

The target planning Reserve Margin used for the 2011 resource plan is 14.2%, based on the Planning Year 2011/12 values of unforced capacity (UCAP) and Midwest Independent Transmission System Operator, Inc. (MISO) Planning Reserve Margin Requirement, as well as anticipated changes to MISO's Resource Adequacy Construct. More information on the Reliability Criteria can be found in Chapter 2 of this IRP.

Short Term:

In the short term, the analysis concentrated on determining the best generation option in the 2015 timeframe to meet the required MISO 14.2% reserve margin. Using current planning assumptions, the recommended replacement option is the installation or purchase of 325 MW of natural gas-fired combined cycle generation (CC) capacity in 2015. Although CC generation was selected as the optimal replacement resource, natural gas-fired combustion turbine (CT) generation was also competitive as a replacement resource. CC and CT generation were essentially equal in terms of the cost to customers in the base case, but CC generation was selected due to its increased operational flexibility, the need of the portfolio for mid-merit generation and its robustness over the range of sensitivities considered.

Multiple options are being evaluated to secure this additional capacity need that may include purchased power, purchase of existing generating capacity, or construction of new generating capacity. Depending on the final outcome of the Utility Boiler MACT Rule, there is also a potential to continue to operate coal units scheduled to be retired through 2015 if new generation is located at that facility. If this option is pursued, it would also delay the Company's capacity need until 2016 versus 2015, as currently planned.

The next capacity need after 2015 is a 185 MW peaking resource in 2017. If the anticipated renewable energy requirements do not develop, this capacity need would accelerate to 2016.

Given the uncertainty of the timing and how the capacity need will be met in this timeframe, the 2015 and 2017 resource needs may be addressed as one resource need.

As the new EPA regulations are finalized in 2011 and 2012, the Company will develop a detailed strategy and seek regulatory approval through the CPCN process.

Long Term:

In the longer term, the Company's next capacity need is in 2021. This need is driven primarily by the anticipated retirement of the older CT units at Miami-Wabash and Connersville (166 MW). The 2021 retirement date is not a firm date, but by 2021, these CTs will be over 50 years old and at or near the end of their lives. Each CT is tested once per year to meet the MISO reliability requirements. Given the age of these turbines and the availability of spare parts, if significant maintenance is required to meet the reliability requirements, the retirement decision on a specific unit could accelerate.

The long-term capacity needs after 2021 are anticipated to be met with CC or CT generation. However, new nuclear generation appears to be cost-effective in the 2025-2030 timeframe under both the cap-and-trade and clean energy regulatory constructs. When there is more certainty with regard to how and when carbon emissions will be regulated, new nuclear generation could have a role in meeting a portion of the generation need.

An overview of the recommended short term and long term resource plan resulting from the planning process is outlined below and summarized on Table 1-A. Also, a comparison of the projected sources of energy and capacity from 2012 to 2031 is shown in Figure 1-A.

Table 1-A DUKE ENERGY INDIANA INTEGRATED RESOURCE PLAN 2012-2031						
Year	Retirements	Additions[1]	Renewables (Nameplate MW)[2]			Major Environmental Control Upgrades[3]
			Wind	Solar	Biomass	
2012	Gallagher 1 & 3 (280 MW)	Edwardsport IGCC (586 MW) Vermillion (352.5 MW)				
2013						
2014						
2015	Wabash River 2-6 (668 MW)	325 MW CC				Gibson 5 New Scrubber Gibson 3-5 Baghouses
2016			100		2	
2017		185 MW CT	100		2	Cayuga 1&2 SCR Gallagher 2&4 SNCR
2018			100		2	
2019				9	27	
2020			100	9	27	
2021	Connersville 1&2 CT (86 MW) Miami-Wabash 1-3,5-6 CT (80 MW)	185 MW CT	200	10	2	
2022		185 MW CT	100	27	2	
2023			100	35	2	
2024			100		2	
2025		185 MW CT	100	18	2	
2026			100			
2027			100	9		
2028		325 MW CC		9		
2029			100	25		
2030		70 MW CT				
2031			100	9		
Total MW	1114	2398.5	1400	160	71	

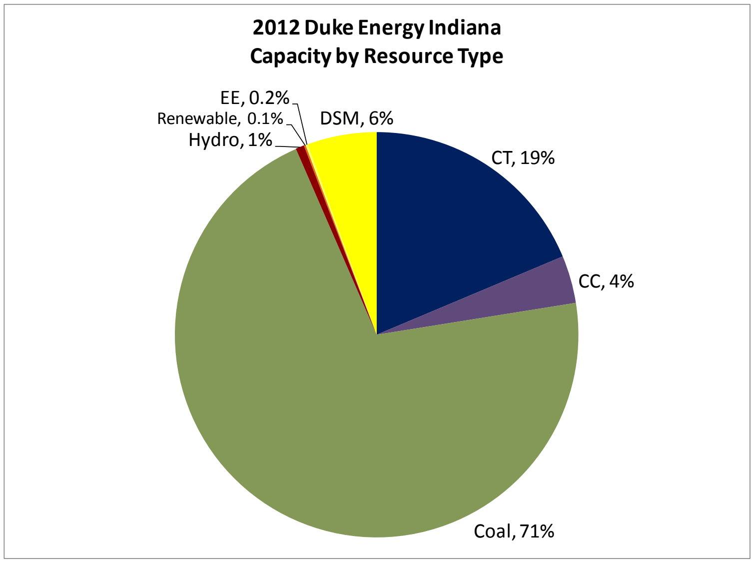
1 The Edwardsport IGCC unit is scheduled to be in service in the 3rd Quarter of 2012 so it will not be available for summer peak until 2013.

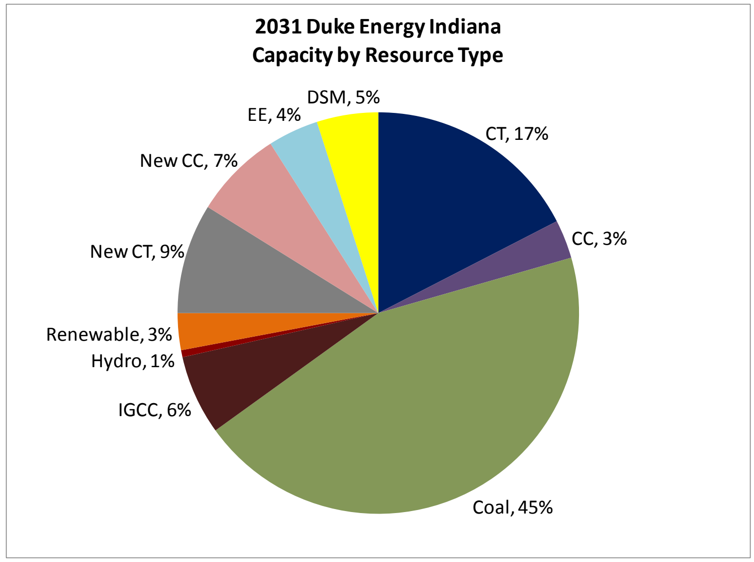
2 Wind and solar MW represent nameplate capacity; for planning purposes, wind has a 10% contribution to peak and solar has 38% contribution to peak.

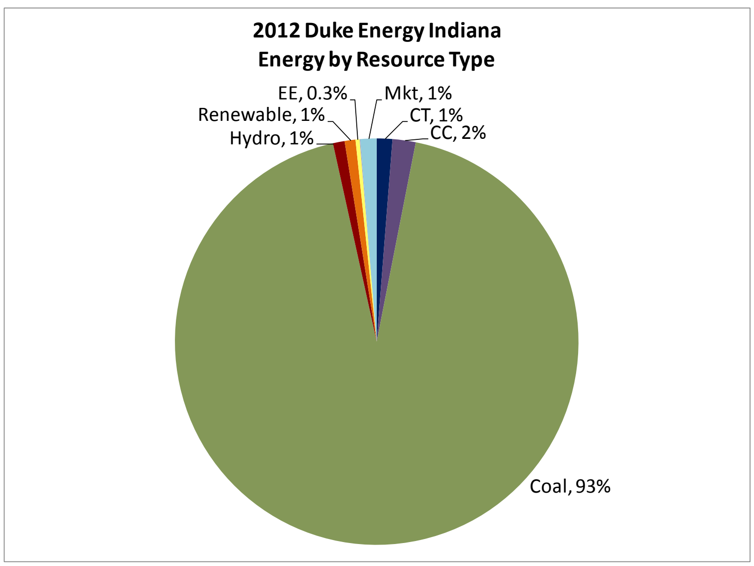
3 Additional control requirements include additives for mercury control, ash system modifications, additional landfill requirements, and intake structure modifications in the 2015 -2018 time frame.

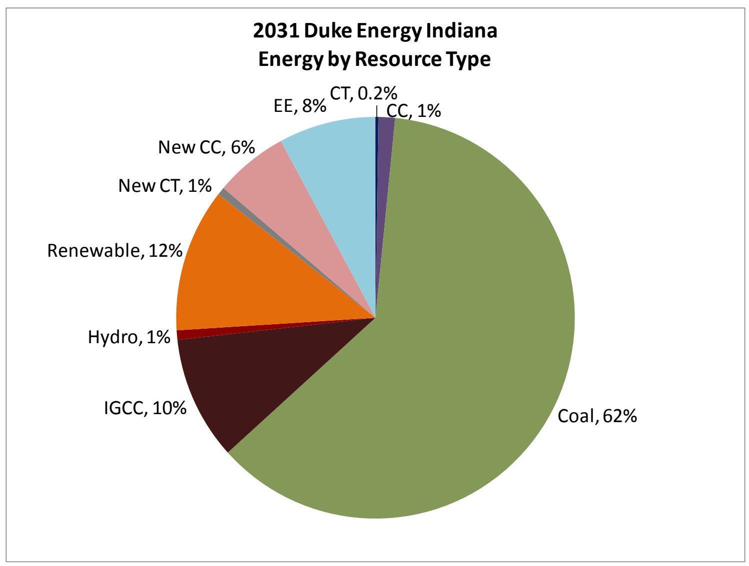
Figure 1-A

Generation Mix 2012 and 2031









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2. SYSTEM OVERVIEW, OBJECTIVES AND PROCESS

A. INTRODUCTION

This chapter will explain the objectives of and the process used to develop the 2011 Duke Energy Indiana Integrated Resource Plan. In the IRP process, the modeling includes the firm electric loads, supply-side and energy efficiency resources, and environmental compliance measures associated with the Duke Energy Indiana service territory. It also includes the WVPA and Indiana Municipal Power Agency (IMPA) ownership shares in Gibson 5 and the corresponding load served by those shares through December 31, 2014, since Duke Energy Indiana provides reserve capacity and energy service for Gibson 5 until then.

B. CHARACTERISTICS OF DUKE ENERGY INDIANA GENERATING AND TRANSMISSION CAPABILITIES

The total installed net summer generation capability owned or purchased by Duke Energy Indiana is currently 6,848 Megawatts (MW) (excluding the ownership interests of IMPA (155 MW) and WVPA (155 MW) in Gibson Generating Station Unit No. 5, but including the non-jurisdictional portion of Henry County Generating Station (50 MW) associated with a long-term contract). This includes Wabash River Units 2, 3 and 5 (265 MW) as generation capability owned by Duke Energy Indiana that were returned to service in the summer of 2011, after the successful appeal of 2009 District Court finding, which ordered those units shut down. The 6,848 MW of capacity consists of 5,045 MW of coal-fired capacity, 285 MW of natural gas-fired combined cycle capacity, 52 MW of hydroelectric capacity, and 1,448 MW of natural gas-fired or oil-fired peaking capacity. Also included are purchase power agreements with Benton County Wind Farm (100 MW, with 10 MW assumed contribution to peak) and the City of Logansport (8 MW).

The steam capacity located at five stations is comprised of 16 coal-fired units.[3] The combined cycle capacity consists of a "single unit" comprised of three natural gas-fired

[3] Edwardsport units 6-8 were retired March 1, 2011

combustion turbines and two steam turbines located at the Noblesville Station. The hydroelectric generation is a run-of-river facility comprised of three units on the Ohio River. The peaking capacity consists of seven oil-fired diesels located at two stations, seven oil-fired CT units located at two stations[4], and 16 natural gas-fired CTs located at four stations. One of these natural gas-fired units has oil back-up. Duke Energy Indiana also provides steam service to one industrial customer from its Cayuga Station, which reduces Duke Energy Indiana's net capability to serve electric load by approximately 20 MW.

Duke Energy Indiana's wholly and jointly owned share of transmission includes approximately 745 circuit miles of 345 kV lines, 648 circuit miles of 230 kV lines and 1,423 circuit miles of 138 kV lines. Duke Energy Indiana, IMPA, and WVPA own the Joint Transmission System (JTS) in Indiana. The three co-owners have rights to use the JTS. Duke Energy Indiana is directly interconnected with seven other balancing authorities (American Electric Power, Louisville Gas and Electric Energy, Ameren, Hoosier Energy, Indianapolis Power and Light, Northern Indiana Public Service Company and Vectren) as well as Duke Energy Ohio.

Duke Energy Indiana, Duke Energy Ohio, and Duke Energy Kentucky comprise the Duke Energy Midwest balancing authority. Duke Energy Ohio is directly connected to five balancing authorities (American Electric Power, Dayton Power & Light, East Kentucky Power Cooperative, Louisville Gas and Electric Energy, and Ohio Valley Electric Corporation), as well as Duke Energy Indiana.

C. <u>OBJECTIVES</u>

An IRP process generally encompasses an assessment of a variety of supply-side, energy efficiency, and environmental compliance alternatives leading to the formation of a diversified, long-term, cost-effective portfolio of options intended to satisfy the electricity demands of customers located within a service territory. The purpose of this IRP is to outline a strategy to furnish these electric energy services over a 20-year planning horizon.

[4] Miami Wabash unit 4 was retired June 1, 2011

The planning process itself must be dynamic and constantly adaptable to changing conditions. The resource plan presented herein represents one possible outcome based upon a single snapshot in time along this continuum. While it is the most appropriate resource plan at this point in time, good business practice requires Duke Energy Indiana to continue to study the options, and make adjustments as necessary and practical to reflect improved information and changing circumstances. Consequently, a good business planning analysis is truly an evolving process that can never be considered complete. In an effort to be better prepared for these changing circumstances, the Company has performed sensitivity analyses that represent possible future impacts to fuel prices, environmental legislation, market prices, load scenarios, energy efficiency and renewable energy requirements.

Duke Energy Indiana's long-term planning objective is to pursue a resource strategy that considers the costs and benefits to all stakeholders (customers, shareholders, employees, suppliers, and community). At times, this involves striking a balance between competing objectives. The major objectives of the plan presented in this filing are:

- Provide adequate, reliable, and economic service to customers while meeting all environmental requirements
- Maintain the flexibility and ability to alter the plan in the future as circumstances change
- Choose a near-term plan that is robust over a wide variety of possible futures
- Minimize risks (such as wholesale market risks, reliability risks, *etc*.)

D. ASSUMPTIONS

The analysis performed to prepare this IRP covers the period 2012-2031.

The base planning assumptions included in the 2011 resource plan include:

- Energy Efficiency – On December 9, 2009, the Commission issued its Phase II Order in Cause No. 42693 (Phase II Order). In the Phase II Order, the Commission found that jurisdictional electric utilities are required to offer certain Core Energy Efficiency Programs to all customer classes and market segments. To implement these programs, the Commission determined that an independent Third Party Administrator (TPA) should be utilized by the electric utilities to oversee the administration and implementation of the Core Programs. The Commission also established annual gross energy savings targets for all jurisdictional electric utilities and directed utilities to offer Core Plus programs in addition to the Core Program offering. Duke Energy Indiana intends to continue to be a leader in energy efficiency by offering programs through a combination of Core Programs to be offered by a TPA and Core Plus Programs offered by Duke Energy Indiana. The Core Plus programs have been submitted for approval under Cause 43955 and Duke is currently awaiting approval of this portfolio of energy efficiency measures.

- Renewable Energy – There is not currently an Indiana or federal renewable energy portfolio standard. However, to assess the impact to the long-term resource need, the Company believes it is prudent to plan for a renewable energy portfolio standard. In this resource plan, an assumption was made that 10% of retail sales would be met with renewable energy sources by 2025, starting in 2016 at 1.0% and increasing 1.0% per year through 2025.
- Carbon Constrained Future – Two regulatory constructs were evaluated to assess the impact of potential climate change legislation. The first consisted of a CO_2 cap-and-trade construct beginning in 2016. The associated allowance prices were assumed to be near the lower end of estimated allowance pricing of previously proposed legislation, such as H.R. 2454. The second construct assessed the impacts of a potential Federal Clean Energy Standard, where an increasing percentage of retail sales, starting in 2016, would be required to come from energy efficiency, various types of renewable energy sources, coal generation with carbon capture and sequestration, new nuclear generation, and new combined cycle natural gas-fired generation.
- New Environmental Regulatory Requirements – The estimated capital and operation and maintenance impacts of multiple new and proposed environmental regulations were incorporated into this IRP. The most impactful of these regulations include:

- Proposed EPA Utility Boiler MACT Rule - Creates emission limits for hazardous air pollutants starting in 2015. Control upgrades vary by station ranging from additives to baghouses.
- Final Cross State Air Pollution Rule - Limits the amount of SO_2 and NO_x allowance allocations starting in 2012.
- Final SO_2 National Air Quality Standard – Potential to limit the amount of SO_2 that can be emitted from a facility. Advanced SO_2 control on all coal-fired units is expected by the 2018 timeframe.
- Ozone National Ambient Air Quality Standard – Potential for additional NO_x controls on facilities expected in the 2018 timeframe to meet existing or new standard.
- Coal Combustion Residuals rule – Anticipated requirements include converting to dry flyash and bottom ash removal and disposal in a lined landfill versus a wet ash basin.
- Fish Impingement and Entrainment Standards – Designed to reduce the amount of fish impinged on the intake screen or entrained through the condenser cooling water system. Expected compliance requirements range from intake screen modifications to barrier nets.

Risks associated with changes to the assumptions are addressed through sensitivity analysis and qualitative reasoning later in this report (see Chapters 5, 6, and 8). For the purposes of the 2011 IRP, Duke Energy Indiana used a flat 2.5% escalation rate for the period of study. Duke Energy Indiana's financial departments provided the after-tax effective discount rate of 7.3% for the development of the IRP.

Reliability Criteria

<u>ReliabilityFirst Resource Adequacy</u>

Duke Energy Indiana's reserve requirements are impacted by ReliabilityFirst, which has adopted a Resource Planning Reserve Requirement Standard that the Loss of Load Expectation (LOLE) due to resource inadequacy cannot exceed one day in ten years (0.1 day per year). This Standard is applicable to the Planning Coordinator, which is the MISO for Duke Energy Indiana.

MISO Module E Resource Requirements

The MISO Tariff includes a long-term resource adequacy requirement similar to the ReliabilityFirst requirement. Beginning with Planning Year June 1, 2009 – May 31, 2010, the LOLE standard became enforceable under MISO's tariff and there are financial consequences for failure to meet this standard.[5]

The Planning Reserve Margin (PRM) that is assigned to each load serving entity (LSE) is on a UCAP (*i.e.*, unforced capacity) basis. The PRM on an ICAP (*i.e.*, installed capacity) basis is translated to PRM_{UCAP} using the MISO system average equivalent forced outage rate excluding events outside of management control ($XEFOR_d$).[6] Each capacity resource is valued at its unforced capacity rating (*i.e.*, installed rating multiplied by 1 minus the unit-specific $XEFOR_d$). Compliance is assessed monthly by comparing the amount of Planning Resource Credits (PRCs)[7] with the monthly forecasted load multiplied by 1 plus the PRM_{UCAP}. For the 2011/12 Planning Year, Duke Energy Indiana is required to meet a PRM_{UCAP} of 3.81%.

However, for IRP purposes, it is necessary to translate PRM_{UCAP} to an equivalent installed capacity reserve margin target (*i.e.*, the historical method used by Duke Energy Indiana) so that the modeling can be performed correctly. The MISO average $XEFOR_d$ is based on the mix of units in MISO (including nuclear, pumped storage and hydro, all of which typically have very high availability), which is different from Duke Energy Indiana's mix of units, so it is necessary to use Duke Energy Indiana's average $XEFOR_d$ to translate the 3.81% PRM_{UCAP} to an equivalent RM_{ICAP} for the Company. For Planning Year 2011/12, the applicable RM_{ICAP} is 11.1%.[8]

[5] The deficiency charges are based on the Cost of New Entry (CONE). MISO's 2011 CONE recalculation filing at FERC on August 1, 2011, would set the value of CONE at $95,000 per MW-month.

[6] $PRM_{UCAP} = (1 – \text{Midwest ISO Average } XEFOR_d)(1 + PRM_{ICAP}) – 1$

[7] 1 PRC is equal to 1 MW of UCAP capacity for generators or BTMG.

[8] $RM_{ICAP} = [(PRM_{UCAP} + 1) / (1 – \text{Duke Energy Indiana Average } XEFOR_d)] – 1$

On July 20, 2011, MISO filed a request at the Federal Energy Regulatory Commission (FERC) to make changes to its Resource Adequacy construct beginning with Planning Year 2013/14. Under the current construct, a MISO-wide diversity factor is utilized to calculate the PRM_{UCAP} that is applied to each LSE's non-coincident peak load forecast. The diversity factor utilized for Planning Year 2011/12 was 4.55%. Under the new construct, PRM_{UCAP} will be applied to each LSE's coincident peak forecast. Duke Energy Indiana believes that use of a higher minimum reserve margin is more appropriate for longer-term planning purposes because preliminary calculations show that Duke Energy Indiana's peak load is more coincident with the MISO peak load than the overall coincidence across the MISO footprint. In addition, changes to the construct related to locational capacity requirements may also increase the required reserve margin, although the exact impact on Duke Energy Indiana is uncertain at this time. Therefore, the minimum Reserve Margin criterion utilized in this IRP analysis as being indicative of the required level of reserves going forward is 14.2%, based on the Planning Year 2011/12 PRM_{UCAP} along with Duke Energy Indiana's coincidence with the MISO peak. To the extent that the actual PRM_{UCAP} for future Planning Years differs from that for Planning Year 2011/12 and depending on the ultimate approved structure of MISO's proposed new construct, Duke Energy Indiana may require either a higher or lower level of reserves than what is shown in this IRP.

E. PLANNING PROCESS

Every two years, Duke Energy Indiana prepares an IRP pursuant to the definition given in the Indiana Administrative Code Rule 7, Guideline for Integrated Resource Planning by an Electric Utility. The process utilized to develop the IRP for this year consisted of two major components, an organizational process and an analytical process.

1. Organizational Process

Development of an IRP requires a high level of communication across key functional areas. Duke Energy Indiana's IRP Team, which manages this process, consists of experts in the following key functional areas: electric load forecasting, resource (supply) planning, retail marketing (energy efficiency program development and evaluation), environmental compliance planning, environmental policy, financial, fuel planning and procurement, engineering and construction, and transmission and distribution planning. It is the Team's responsibility to examine the IRP requirements contained within the Indiana rules and conduct the necessary analyses to comply with the filing requirements.

A key step in the preparation of the IRP is the integration of the electric load forecast, supply-side options, environmental compliance options, and energy efficiency options. In addition, it is important to conduct the integration while also incorporating interrelationships with other areas.

2. Analytical Process

The development of an IRP is a multi-step process involving the key functional planning areas mentioned above. The steps involved are listed below. To facilitate timely completion of this project, a number of these steps are performed in parallel.

1. Develop planning objectives and assumptions.
2. Prepare the electric load forecast (Chapter 3).
3. Identify and screen potential cost-effective electric energy efficiency resource options (Chapter 4).
4. Identify and screen around the cost-effectiveness of potential electric supply-side resource options (Chapter 5).
5. Identify and screen around the cost-effectiveness of potential environmental compliance options (Chapter 6).
6. Integrate the energy efficiency, supply-side and environmental compliance options (Chapter 8).
7. Perform final sensitivity and scenario analyses on the integrated resource alternatives and recommend a plan (Chapter 8).
8. Determine the best way to implement the recommended plan (Chapter 8 and Appendix D Short-Term Implementation Plan).

Duke Energy Indiana's planners strive to keep abreast of new techniques, industry changes, and alternative models through attendance at various seminars, industry contacts, trade publications, and on-line via the Internet. This process may be modified in the future to incorporate any new approaches or changes that are appropriate.

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3. ELECTRIC LOAD FORECAST

A. GENERAL

Duke Energy Indiana is the State's largest electric utility, serving approximately 782,000 electric customers in 69 of Indiana's 92 counties covering North Central, Central, and Southern Indiana. Its service area spans 22,000 square miles and includes the cities of Bloomington, Terre Haute, and Lafayette, and suburban areas near Indianapolis; Louisville, Kentucky; and Cincinnati, Ohio.

The electric energy and peak demand forecasts of the Duke Energy Indiana service territory are prepared each year by a staff that is shared with the other Duke Energy affiliated utilities. The Duke Energy Indiana load forecast is developed independently of the projections for other Duke Energy served territories, but the overall methodology is the same. Duke Energy Indiana does not perform joint load forecasts with non-affiliated utility companies, and the forecast is prepared independently of the forecasting efforts of non-affiliated utilities.

B. FORECAST METHODOLOGY

Energy is a key commodity in the overall level of economic activity. As residential, commercial, and industrial economic activity increases or decreases, the use of energy, or more specifically electricity, should increase or decrease, respectively. It is this linkage to economic activity that is important to the development of long-range energy forecasts. For that reason, forecasts of the national and local economies must be key ingredients to energy forecasts.

The general framework of the electric energy and peak demand forecast of the Duke Energy Indiana System involves a national economic forecast, a service area economic forecast, and the electric load forecast.

The national economic forecast provides information about the prospective growth of the national economy. This involves projections of national economic and demographic concepts such as population, employment, industrial production, inflation, wage rates, and income. The national economic forecast is obtained from Moody's Analytics, a national economic consulting firm.

Similarly, the history and forecast of key economic and demographic concepts for the Duke Energy Indiana service area economy is obtained from Moody's Analytics. The service area economic forecast is used along with the energy and peak models to produce the electric load forecast.

1. **Service Area Economy**

   Duke Energy Indiana provides electric service to customers in portions of 69 counties in North Central, Central and Southern Indiana. Currently, on a retail sales basis, Duke Energy Indiana provides electric service to 5 percent or more of the population in 61 of these counties. This phenomenon occurs because Duke Energy Indiana's service area is dotted with numerous municipal utilities and Rural Electric Membership Cooperatives (REMCs), some of which are Duke Energy Indiana's wholesale customers.

   There are four major sectors to the service area economy: employment, income, inflation, and population. Forecasts of employment are provided by North American Industry Classification System (NAICS) and aggregated to major sectors such as commercial and industrial. Income for the local economy is forecasted in several categories including wages, rents, proprietors' income, personal contributions for social insurance, and transfer payments. The forecasts of these items are summed to produce the forecast of income less personal contributions for social insurance. Inflation is measured by changes in the Consumer Price Index (CPI). Population projections are aggregated from forecasts by age-cohort. This information serves as input into the energy and peak load forecast models.

2. **Electric Energy Forecast**

   The methodology follows economic theory in that the use of energy is dependent upon key economic factors such as income, production, energy prices, and employment. Weather also plays an important role in energy usage. As mentioned in a previous section, the energy forecast depends upon a forecast of economic activity. The following sections provide the specifications of the econometric equations developed to forecast electricity sales for Duke Energy Indiana.

Several sectors comprise the Duke Energy Indiana Electric Load Forecast Model. Forecasts are prepared for electricity sales to the residential, commercial, industrial, governmental, other, and wholesale energy sectors. Additionally, projections are made for summer and winter peak demands.

Residential Sector - There are two components to Duke Energy Indiana's residential sector energy forecast: the number of residential customers and energy use per customer. The forecast of total residential sales is developed by multiplying the forecasts of these two components.

Customers - The number of electric residential customers (households) is affected by population and real per capita income. This is represented as follows:

(1) Number of Residential Customers =

f (Service Area Population, Real Per Capita Income).

where Real Per Capita Income =

f(Service Area Total Personal Income/Service Area Population/CPI),

f = function of.

While changes in population and per capita income are expected to alter the number of residential customers, the adjustment is not immediate. The number of customers will change gradually over time as a result of a change in population and real per capita income. This adjustment process is modeled using lag structures.

Residential Use per Customer - The key ingredients that impact energy use per customer are per capita income, real electricity prices and the combined impact of numerous other determinants. These include the saturation of air conditioners, electric space heating, other appliances, the efficiency of those appliances, and weather.

(2) Energy usage per Customer =
f (Real Income per Capita * Efficient Appliance Stock,
Real Marginal Electric Price * Efficient Appliance Stock,
Saturation of Electric Heating Customers,
Saturation of Customers with Central Air Conditioning,
Saturation of Window Air Conditioning Units,
Efficiency of Space Conditioning Appliances,
Billed Cooling and Heating Degree Days).

Commercial Sector - Commercial electricity usage changes with the level of local commercial employment, real electricity price, and the impact of weather. The model is formulated as follows:

(3) Commercial Sales =
f (Commercial Employment,
Real Marginal Electric Price,
Billed Heating and Cooling Degree Days).

Industrial Sector - Duke Energy Indiana produces industrial sales forecasts by NAICS classifications with the exception of Duke Energy Indiana's largest industrial customer, which is based upon its recent historical usage and a growth factor related to the industry to which that customer belongs.

Electricity use by industrial customers is primarily dependent upon the level of industrial production and the impacts of real electricity prices, electric price relative to alternate fuels, and weather. The general model of industrial sales is formulated as follows:

(4) Industrial Sales =
f (Industrial Production,

Real Marginal Electric Price,

Marginal Electric Price/Alternate Fuel Price,

Degree Days).

Governmental Sector – The Company uses the term Other Public Authorities (OPA) to indicate those customers involved and/or affiliated with federal, state or local government. Electricity usage for this sector is related to governmental employment, the real price of electricity, and heating and cooling degree days.

The general model of OPA sales is formulated as follows:

(5) OPA Sales =

f (Governmental Employment,

Real Marginal Electric Price,

Billed Cooling and Heating Degree Days).

Other - Duke Energy Indiana provides electricity for municipal activities such as street and highway lighting and traffic signals. This "other" sales category is forecasted using historical trends.

Total Retail Electricity Sales - Once these separate components have been projected - Residential sales, Commercial sales, Industrial sales, OPA sales, and Other sales - they can be summed to produce the projection of total retail electricity sales.

Wholesale - Duke Energy Indiana provides electricity on a contract basis to various wholesale customers. Loads for these wholesale customers are forecasted using specifications contained within the contracts and historical trend analysis.

Total System Sendout/Net Energy For Load - Upon completion of the total electric sales forecast, the total Duke Energy Indiana system sendout or net energy for load forecast can be prepared. This requires that all the individual sector forecasts be combined along with forecasts of Wholesale sales and system losses. After the system sendout forecast is completed, the peak load forecast can be prepared.

Weather-Normalized Sendout - The level of peak demand is related to economic conditions such as income and prices. The best indicator of the combined influences of economic variables on peak demand is the level of base load demand exclusive of aberrations caused by non-normal weather. Thus, the first step in developing the peak equations described above is to weather-normalize monthly sendout.

The procedure used to develop historical weather-normalized sendout data involves two parts.

First, instead of weather-normalizing sendout in the aggregate, each sales component is weather-normalized. In other words, residential sales, commercial sales, *etc*. are individually adjusted for the difference between normal and actual weather. Using the equations previously discussed, the adjustment process is performed as follows:

Let: KWH(N) = f(W(N))g(E)

KWH(A) = f(W(A))g(E)

Where: KWH(N) = weather normalized electric sales (kilowatt-hours)

f = function

W(N) = normal weather variables

g(E) = function of economic variables

KWH(A) = actual electric sales

W(A) = actual weather variables

Then: KWH(N) = KWH(A) * f(W(N))g(E)/f(W(A))g(E)

= KWH(A) * f(W(N))/f(W(A)).

With this process, weather-normalized sales are computed by scaling actual sales for each class by a factor from the forecast equation that accounts for the impact of deviations from normal weather.

Industrial sales are weather-normalized using a factor from an aggregate equation developed for that purpose.

Wholesale loads are weather-normalized using the factors developed from the residential and commercial equations.

Second, weather-normalized sendout is computed by summing the weather-normalized sales with non-weather sensitive sector sales and other miscellaneous components. This weather-adjusted sendout is then used as a variable in the summer and winter peak equations.

Peak Load - Forecasts of summer and winter peak demands for Duke Energy Indiana are developed using econometric models.

The peak forecasting model is designed to represent closely the relationship of weather to peak loads. Only days when the temperature equaled or exceeded 90 degrees are included in the summer peak model. For the winter, only those days with a temperature at or below 10 degrees are included in the winter peak model.

Summer Peak - Summer peak loads are influenced by the current level of economic activity and the weather conditions. The primary weather factors are temperature and humidity; however, not only are the temperature and humidity around the time of the peak important, but also the morning low temperature, and the high temperature from the day before. These other temperature variables are important to capture the effect of thermal buildup.

The summer equation can be specified as follows:

(6) Peak =
f (Weather Normalized Sendout,
Weather Factors).

Winter Peak - Winter peak loads are also influenced by the current level of economic activity and the weather conditions. The selection of winter weather factors depends upon whether the peak occurs in the morning or evening. For a morning peak, the primary weather factors are morning low temperatures, wind speed, and the prior evening's low temperature. For an evening peak, the primary weather factors are the evening low temperature, wind speed, and the morning low temperature.

The winter equation is specified in a similar fashion as the summer:

(7) Peak =
f (Weather Normalized Sendout,
Weather Factors).

The summer and winter peak equations are estimated separately for the respective seasonal periods. Peak load forecasts are produced under specific assumptions regarding the type of weather conditions typically expected to cause a peak.

Peak Forecast Procedure - The summer peak usually occurs in August in the afternoon and the winter peak occurs in January in the morning. Since the energy model produces forecasts under the assumption of normal weather, the forecast of sendout is "weather-normalized" by design. Thus, the forecast of sendout drives the forecast of the peaks. In the forecast, the weather variables are set to values determined to be normal peak-producing conditions. These values are derived using historical data on the weather conditions in each year (summer and winter).

C. ASSUMPTIONS

1. Macro Assumptions

It is generally assumed that the Duke Energy Indiana service area economy will tend to react much like the national economy over the forecast period. Duke Energy Indiana uses a long-term forecast of the national and service area economy prepared by Moody's Analytics.

No major wars or energy embargoes are assumed to occur during the forecast period. Even if minor conflicts and/or energy supply disruptions, such as those caused by hurricanes, occur during the forecast period, the long-range path of the overall forecast would not be dramatically altered.

2. Local Assumptions

With regard to the local economy, the Duke Energy Indiana service area has traditionally been strongly influenced by the level of manufacturing activity. While manufacturing employment declines over the forecast period, increasing manufacturing productivity and the economic rebound keep both total manufacturing output and industrial energy sales increasing. The majority of the employment growth over the forecast period occurs in the non-manufacturing sector. This reflects a continuation of the trend toward the service industries and the fundamental change that is occurring in manufacturing and other basic industries.

Duke Energy Indiana is also affected by national population trends. The average age of the U.S. population is rising. The primary reasons for this phenomenon are stagnant birth rates and lengthening life expectancies. As a result, the portion of the population of the Duke Energy Indiana service area that is "age 65 and older" increases over the forecast period. Over the period 2011 to 2021, Duke Energy Indiana's population is expected to increase at an annual average rate of 0.9 percent. Nationally, population is expected to grow at an annual rate of 1.0 percent over the same period.

The residential sector is the largest in terms of total existing customers and total new customers per year. Within the Duke Energy Indiana service area, many commercial customers serve local markets. Therefore, there is a close relationship between the growth in local residential customers and the growth in commercial customers. The number of new industrial customers added per year is relatively small.

3. Customer Self-Generation

For many years, many industrial customers, and some commercial customers, have inquired about cogeneration, the sequential production of electricity and process heat or steam. In a few cases, cogeneration has been installed. In almost every case analyzed, Duke Energy Indiana's industrial rates were too low for the project to be economically justified. No additional cogeneration units that impact the load forecast are assumed to be built or operated within the Duke Energy Indiana service area during the forecast period.

In the area of other self-generation, several units are in place within Duke Energy Indiana's service territory to provide a source of emergency backup electricity. Where economical, a number of these units participate and are represented under Duke Energy Indiana’s CallOption or QuoteOption program under PowerShare®.

D. DATABASE DOCUMENTATION

In the following sections, information on databases is provided for Duke Energy Indiana.

The first step in the forecasting process is the collection of relevant information and data. The database discussion is broken into three parts:

1) Economic Data,
2) Energy and Peak Data, and
3) Forecast Data.

1. Economic Data

The major groups of data in the economic forecast are employment, income, demographics, national production, and national employment. The source of this information is Moody’s Analytics.

Employment - Employment statistics, by industry, are collected on a county-wide basis. Data for both the manufacturing and non-manufacturing categories are then aggregated into a total of the 61 Indiana counties where Duke Energy Indiana serves five percent or more of the total population.

Income - Updates of historical local income data series are gathered on a county-level basis and summed to the service-area level. This is performed for total personal income, which includes dividends, interest and rent; transfer payments; wage and salary disbursements plus other labor income; non-farm proprietors' income; and personal contributions for social insurance.

Population - Population statistics are also aggregated into a total of the 61 Indiana counties where Duke Energy Indiana serves five percent or more of the total population.

National Production and Employment - Production indices and employment statistics are obtained for each NAICS category. This information is utilized in the forecast of local production indices.

2. Energy and Peak Data

The majority of data required to develop the electricity sales and peak forecasts is obtained from the Duke Energy Indiana service area economic data provided by Moody's Analytics, from Duke Energy Indiana financial reports and research groups, and from national sources. With regard to the national sources of information, generally all national information is obtained from Moody's Analytics. However, local weather data is obtained from the National Oceanic and Atmospheric Administration (NOAA).

The major groups of data that are used in developing the energy forecasts are: kilowatt-hour sales by customer class, number of customers, use-per-customer, electricity prices, natural gas prices, appliance saturations, and local weather data.

Kilowatt-hour Sales and Revenue - Duke Energy Indiana collects sales and revenue data monthly by rate class. For forecast purposes, this information is aggregated into the following categories: residential, commercial, industrial, OPA, and the other sales category. In the industrial sector, sales and revenue for each manufacturing NAICS are collected. Statistics regarding sales and revenue for each wholesale customer are also collected. From the sales and revenue information, average electricity prices by sector can be calculated.

Number of Customers - The number of customers by sector, on a monthly basis, is also obtained from Duke Energy Indiana records. From the sales and customer data, average electricity use per customer can be calculated.

Natural Gas Prices - Natural gas prices are provided by Moody's Analytics.

Saturation of Appliances - The saturation of appliances within the service area is provided via customer surveys conducted by the Company's Market Research group.

Local Weather Data - Local climatologic data is provided by NOAA for the Indianapolis, Indiana, reporting station.

Peak Weather Data - The weather conditions associated with the monthly peak load are collected from the hourly and daily data recorded by NOAA. The weather variables which influence the summer peak are maximum temperature on the peak day and the day before, morning low temperature, and humidity on the peak day. The weather influence on the winter peak is measured by the low temperatures and the associated wind speed. The variables selected are dependent upon whether it is a morning or an evening peak load.

An average of extreme weather conditions is used as the basis for the weather component in the preparation of the peak load forecast as previously discussed. Using historical data for the single weather occurrence on the summer peak day and the single weather occurrence on the winter peak day in each year, an average extreme weather condition can be computed for each season.

3. Forecast Data

Projections of exogenous variables in Duke Energy Indiana's models are required in the following areas: national and local employment, income, industrial production, and population, as well as natural gas and electricity prices. The projections for employment, income, industrial production and population are obtained from Moody’s Analytics. The projections of appliance saturations and efficiency levels are obtained from Itron, Inc.

Population projections for the service area are prepared by first collecting county-level population forecasts for the 61 counties in which the company serves five percent or more of the population. The Duke Energy Indiana service territory population forecast can then be produced by calculating the total of the 61 county projections.

Natural Gas Price - The forecast of natural gas prices used in the load forecast is also provided by Moody’s Analytics.

Electricity Prices - The projected change in electricity prices over the forecast interval is provided by the Company’s Financial Planning and Analysis department and Moody’s Analytics.

4. Load Research and Market Research Efforts

Load Research - Duke Energy Indiana is committed to the continued development and maintenance of a substantive class load database of typical customer electricity consumption patterns. Complete load profile information, or 100% sample data, is maintained for commercial and industrial customers whose demand is greater than 500 kW. Additionally, Duke Energy Indiana continues to collect whole premise or building level electricity consumption patterns on representative samples of the various customer classes and rate groups whose demands are less than 500 kW.

Duke Energy maintains an on-going load research program in each retail rate jurisdiction (NC/SC, OH/KY, IN). Duke Energy is an active member of the Association of Edison Illuminating Companies (AEIC) Load Research Committee and utilizes the AEIC Load Research Manual as a reference for much of its practices.

The Duke Energy Indiana Load Research program consists of approximately 3,350 meters representing about 2,700 accounts selected from our customers in our Indiana service territory. The program consists of a census sample (all primary and transmission distribution customers and secondary distribution customer with a maximum demand greater than or equal to 500 kW) and stratified random samples for the residential and non-residential revenue classes with demand less than 500 kW. Annual kWh is used as the stratification variable for the samples.

An interval data recorder is installed at each sample location and the recorder is programmed to record usage in fifteen minute intervals. The interval data is retrieved at least monthly and is loaded into the Oracle Load Analysis System. This is an industry-acceptable application, which is a series of software programs for interval data input, validation, editing, analysis, storage and reporting. As data is loaded into the database the results are reviewed; data problems researched; and necessary steps are taken to resolve any discrepancies.

After the data has been reviewed, calendar month analysis is performed using the "ratio analysis" subsystem for the revenue class samples and the "100% sample analysis" subsystem to compute load statistics for the census group. This analysis provides hourly load estimates at the individual, rate/revenue class and customer class levels. In addition, standard summary statistics are provided including non-coincident peak, coincident peak and load factor information. Components of Duke Energy Indiana's Load Research studies are evaluated on an annual basis to ensure the integrity of the samples. The Company reviews the relative precisions of the demand estimates for significant hours to determine data quality. The samples are checked to see if they continue to represent their populations and new weights calculated if necessary. Strata migrations and dropouts are monitored and addressed by providing replacements if needed. The Load Research Department confers with the Rate Department and Load Forecasting to ensure that the studies continue to meet their objectives.

Market Research - Primary research projects continue to be conducted at Duke Energy Indiana as part of the on-going efforts to gain knowledge about Duke Energy Indiana's customers. These projects include customer satisfaction studies, appliance saturation studies, energy efficiency impact and process evaluation studies, and related types of marketing research projects.

E. MODELS

Specific analytical techniques for Duke Energy Indiana have been employed for development of the forecast models.

1. Specific Analytical Techniques

Regression Analysis

Ordinary least-squares is the principal regression technique employed to estimate economic/behavioral relationships among the relevant variables. This econometric technique provides a method to perform quantitative analysis of economic behavior.
Ordinary least-squares techniques were used to model electric sales. Based upon their relationship with the dependent variable, several independent variables were tested in the regression models. The final models were chosen based upon their statistical strength and logical consistency.

Logarithmic Transformations

The projection of economic relationships over time requires the use of techniques that can account for non-linear relationships. By transforming the dependent variable and independent variables into their "natural logarithm", a non-linear relationship can be transformed into a linear relationship for model estimation purposes.

Serial Correlation

It is often the case in forecasting an economic time series that residual errors in one period are related to those in a previous period. This is known as serial correlation. By correcting for this serial correlation of the estimated residuals, forecast error is reduced and the estimated coefficients are more efficient. The Marquardt algorithm is employed to correct for the existence of autocorrelation.

Qualitative Variables

In several equations, qualitative variables are employed. In estimating an econometric relation using time series data, it is quite often the case that "outliers" are present in the historic data. These unusual deviations in the data can be the result of problems such as errors in the reporting of data by particular companies and agencies, labor-management disputes, severe energy shortages or restrictions, and other perturbations that do not repeat with predictability. Therefore, in order to identify the true underlying economic relationship between the dependent variable and the other independent variables, qualitative variables are employed to account for the impact of the outliers.

2. End-Use Modeling

Many different forecasting methodologies exist, each with its own strengths and weaknesses. Historically, Duke Energy Indiana has projected energy requirements through econometric analysis. Econometric methods are a means of representing economic behavior through statistical techniques such as regression analysis. The primary factors affecting energy use, such as income, employment, price, weather, and the like are included in the equations used to project energy requirements.

In Duke Energy Indiana’s view, the forecasts derived from these models have appeared to be reasonable. In addition, these models previously have been presented to, and accepted by, the IURC in formal proceedings. However, Duke Energy Indiana reviews its forecasting methodology each year to provide projections that are as accurate and reliable as possible, given all the variables and uncertainties involved.

Duke Energy Indiana has not adopted end-use modeling for the development of the long-range forecasts used in this integrated resource plan. Duke Energy Indiana considers the forecasting methods currently utilized to provide adequate predictions of the future.

F. FORECASTED DEMAND AND ENERGY

On the following figures, the loads for Duke Energy Indiana are provided.

1. Service Area Energy Forecasts

Figure 3-B contains the energy forecast for Duke Energy Indiana's service area.
Residential use for the twenty-year period of the forecast for the entire Duke Energy Indiana service area is expected to increase an average of 1.1 percent per year; Commercial use, 0.8 percent per year; and Industrial use, 1.1 percent per year. The summation of the forecast across each sector and including losses results in a forecast growth rate of 0.5 percent for Net Energy for Load. Net Energy for Load and its growth rate are impacted by Sales for Resale due to the length of contracts with wholesale customers.

2. System Seasonal Peak Load Forecast

Figure 3-C contains forecasts of summer and winter peaks for the Duke Energy Indiana service area. The tables show the summer and succeeding winter peaks, the summer peaks being the predominant ones historically.

Projected growth in the summer peak demand for the Duke Energy Indiana system is 0.9 percent. Projected growth in the winter peak demand is 0.6 percent.

3. Controllable and Interruptible Loads

There are controllable loads included in the forecast. Due to the nature of the operation of customers, it is possible that load may be reduced. The amount of load reduction depends upon the level of operation of the particular customers. See Chapter Four for a complete discussion of the impacts of interruptible and other demand response programs. The difference between the internal and native peak loads consists of the impact from the interruptible and other demand response programs.

4. Load Factor

Table 3-A below shows the annual percentage load factor for Duke Energy Indiana. It shows the relationship between Net Energy for Load, Figure 3-B and the annual peak, Figure 3-C.

Figure 3-A Load Factor	
2006	60.59%
2007	57.58%
2008	69.93%
2009	67.83%
2010	66.66%
2011	64.01%
2012	63.62%
2013	63.37%
2014	63.30%
2015	61.57%
2016	60.96%
2017	60.95%
2018	60.68%
2019	60.22%
2020	60.52%
2021	60.66%
2022	60.39%
2023	60.48%
2024	60.20%
2025	60.58%
2026	60.83%
2027	60.79%
2028	60.29%
2029	60.50%
2030	60.29%
2031	60.60%

5. Range of Forecasts

Under the assumption of normal weather, the most likely forecast of electrical energy demand and peak loads is generated using forecasts of economic variables. Moody's Analytics provides the base economic forecast used to prepare the most likely energy demand and peak load forecasts.

In generating the high and low forecasts, the Company used the standard errors of the regression from the econometric models used to produce the base energy forecast. The bands are based on a 95% confidence interval around the forecast which equates to 1.96 standard deviations. These calculations were used to adjust the base forecast up or down, thus providing high and low bands around the most likely forecast.

In general, the upper band reflects relatively optimistic assumptions about the future growth of Duke Energy Indiana sales while the lower band depicts the impact of a pessimistic scenario.

Figure 3-D provides the high, low, and most likely forecasts of electric energy and peak demand, respectively, for the Duke Energy Indiana system.

6. Indiana Utilities Standardized Load Forecast Template

A standardized load forecast template, which was agreed upon by the Indiana utilities as part of the IRP Investigation, docketed as Cause No. 43643, is shown in the Appendix F (see Table F-2).

Figure 3-B

Duke Energy Indiana

SERVICE AREA ENERGY FORECAST (MEGAWATT HOURS) a

	YEAR	(1) RURAL AND RESIDENTIAL	(2) COMMERCIAL	(3) INDUSTRIAL	(4) STREET-HWY LIGHTING	(5) OPA	(6) SALES FOR RESALE b	(7) OTHER	(8) (1+2+3 +4+5+6+7) TOTAL CONSUMPTION	(9) LOSSES AND UNACCOUNTED FOR d	(10) (8+9) NET ENERGY FOR LOAD
-5	2006	8,718,980	5,902,623	11,726,913	53,847	2,211,767	4,723,977	40,140	33,378,245	2,198,771	35,577,016
-4	2007	9,395,500	6,318,494	11,572,052	53,952	2,329,229	3,880,798	43,506	33,593,532	1,034,307	34,627,839
-3	2008	9,267,376	6,263,112	10,791,662	54,225	2,280,867	7,700,805	42,474	36,400,520	1,950,952	38,351,473
-2	2009	8,901,481	6,008,141	9,031,515	54,196	2,269,155	7,675,475	38,098	33,978,061	1,894,728	35,872,788
-1	2010	9,609,251	6,228,528	10,081,641	53,878	2,256,283	7,630,580	37,959	35,898,120	1,913,888	37,812,008
0	2011	9,097,004	6,139,141	10,192,654	53,979	2,225,277	7,081,406	40,000	34,829,461	2,134,053	36,963,514
1	2012	9,097,586	6,268,371	10,243,996	54,081	2,286,313	7,094,666	40,000	35,085,013	2,152,134	37,237,147
2	2013	9,119,369	6,440,329	10,284,401	54,182	2,380,969	7,095,930	40,000	35,415,180	2,176,709	37,591,889
3	2014	9,168,796	6,558,631	10,287,973	54,284	2,423,203	7,101,833	40,000	35,634,719	2,192,673	37,827,392
4	2015	9,235,716	6,593,936	10,338,789	54,386	2,436,729	4,377,612	40,000	33,077,169	2,205,167	35,282,336
5	2016	9,287,023	6,574,367	10,400,742	54,488	2,423,794	4,733,863	40,000	33,514,277	2,218,318	35,732,595
6	2017	9,316,014	6,537,952	10,470,079	54,591	2,407,230	4,740,339	40,000	33,566,205	2,221,853	35,788,058
7	2018	9,326,622	6,493,792	10,535,978	54,693	2,385,687	4,747,035	40,000	33,583,808	2,222,836	35,806,644
8	2019	9,330,299	6,451,193	10,599,310	54,796	2,363,397	4,753,949	40,000	33,592,945	2,223,185	35,816,130
9	2020	9,486,758	6,518,308	10,750,686	54,899	2,380,454	4,761,066	40,000	33,992,170	2,252,392	36,244,562
10	2021	9,640,962	6,577,168	10,911,851	55,002	2,394,998	4,768,547	40,000	34,388,528	2,281,371	36,669,899
11	2022	9,774,076	6,633,808	11,080,877	55,105	2,408,658	4,775,802	40,000	34,768,327	2,309,130	37,077,457
12	2023	9,917,607	6,686,398	11,255,226	55,209	2,422,658	4,783,305	40,000	35,160,404	2,337,787	37,498,191
13	2024	10,069,201	6,735,353	11,430,191	55,313	2,434,275	4,790,957	40,000	35,555,291	2,366,649	37,921,940
14	2025	10,229,249	6,788,708	11,607,544	55,417	2,445,373	4,798,740	40,000	35,965,031	2,396,600	38,361,631
15	2026	10,390,773	6,841,926	11,781,122	55,521	2,452,694	4,806,511	40,000	36,368,548	2,426,092	38,794,640
16	2027	10,556,654	6,895,718	11,961,651	55,625	2,457,625	4,814,475	40,000	36,781,749	2,456,290	39,238,039
17	2028	10,727,496	6,950,363	12,143,889	55,729	2,460,159	4,822,713	40,000	37,200,349	2,486,879	39,687,228
18	2029	10,900,420	7,009,833	12,324,004	55,834	2,462,648	4,830,938	40,000	37,623,677	2,517,813	40,141,490
19	2030	11,076,061	7,074,023	12,504,938	55,939	2,463,312	4,839,387	40,000	38,053,659	2,549,234	40,602,893
20	2031	11,258,371	7,144,446	12,687,893	56,044	2,460,747	4,847,910	40,000	38,495,411	2,581,519	41,076,930

(a) Figures in years -5 thru -1 reflect the impact of historical demand side programs.

(b) Sales for resale to municipals.

(c) Figures in years -5 thru -1 reflect the impact of historical demand side programs.

(d) Transmission, transformer and other losses and energy unaccounted for.

Figure 3-C

Duke Energy Indiana

SYSTEM SEASONAL PEAK LOAD FORECAST (MEGAWATTS) a,b

		SUMMER			WINTER e		
	YEAR	**LOAD**	**CHANGE c**	**PERCENT CHANGE d**	**LOAD**	**CHANGE c**	**PERCENT CHANGE d**
-5	2006	6702			5933		
-4	2007	6866	163	2.4	5996	63	1.1
-3	2008	6243	-622	-9.1	6023	27	0.5
-2	2009	6037	-206	-3.3	5602	-421	-7.0
-1	2010	6476	439	7.3	5878	276	4.9
0	2011	6592	116	1.8	5988	110	1.9
1	2012	6663	72	1.1	5993	4	0.1
2	2013	6772	108	1.6	6017	25	0.4
3	2014	6822	51	0.7	5889	-128	-2.1
4	2015	6541	-281	-4.1	5682	-208	-3.5
5	2016	6673	132	2.0	5924	243	4.3
6	2017	6703	30	0.5	5819	-105	-1.8
7	2018	6737	33	0.5	5893	74	1.3
8	2019	6789	52	0.8	5956	62	1.1
9	2020	6818	29	0.4	5861	-95	-1.6
10	2021	6901	83	1.2	6046	185	3.2
11	2022	7009	108	1.6	6181	134	2.2
12	2023	7078	69	1.0	6110	-71	-1.1
13	2024	7171	93	1.3	6233	123	2.0
14	2025	7229	58	0.8	6277	44	0.7
15	2026	7280	51	0.7	6200	-77	-1.2
16	2027	7368	89	1.2	6385	185	3.0
17	2028	7494	126	1.7	6397	12	0.2
18	2029	7574	80	1.1	6512	115	1.8
19	2030	7688	114	1.5	6589	77	1.2
20	2031	7738	51	0.7	6639	50	0.8

(a) Figures in years -5 thru -1 reflect the impact of historical demand side programs.
(b) Includes interruptible and demand response load.
(c) Difference betw een reporting year and previous year.
(d) Difference expressed as a percent of previous year.
(e) Winter load reference is to peak loads w hich occur in the follow ing w inter.

Figure 3-D
DUKE INDIANA
RANGE OF FORECASTS
ECONOMIC BANDS

	ENERGY FORECAST (MEGAWATT HOURS) (NET ENERGY FOR LOAD)			PEAK LOAD FORECAST a (MEGAWATTS)		
YEAR	LOW	MOST LIKELY	HIGH	LOW	MOST LIKELY	HIGH
2011	34,384,007	36,963,514	39,558,886	6,129	6,592	7,063
2012	34,115,979	37,237,147	40,374,793	6,099	6,663	7,234
2013	34,218,390	37,591,889	40,980,170	6,155	6,772	7,394
2014	34,306,557	37,827,392	41,362,858	6,175	6,822	7,475
2015	31,661,671	35,282,336	38,917,809	5,871	6,541	7,217
2016	32,031,278	35,732,595	39,449,451	5,978	6,673	7,376
2017	32,024,535	35,788,058	39,568,046	5,990	6,703	7,425
2018	31,994,557	35,806,644	39,635,791	6,004	6,737	7,477
2019	31,962,725	35,816,130	39,687,216	6,038	6,789	7,548
2020	32,299,204	36,244,562	40,208,299	6,055	6,818	7,590
2021	32,637,792	36,669,899	40,720,947	6,121	6,901	7,691
2022	32,963,615	37,077,457	41,210,791	6,210	7,009	7,818
2023	33,303,010	37,498,191	41,713,365	6,263	7,078	7,901
2024	33,647,667	37,921,940	42,216,734	6,345	7,171	8,011
2025	34,008,281	38,361,631	42,736,050	6,385	7,229	8,083
2026	34,365,768	38,794,640	43,245,237	6,424	7,280	8,144
2027	34,733,691	39,238,039	43,764,839	6,497	7,368	8,248
2028	35,109,059	39,687,228	44,288,601	6,614	7,494	8,382
2029	35,491,745	40,141,490	44,815,221	6,682	7,574	8,476
2030	35,883,177	40,602,893	45,347,386	6,780	7,688	8,607
2031	36,287,072	41,076,930	45,892,480	6,821	7,738	8,665

(a) Includes interruptible and demand response load.

4. ENERGY EFFICIENCY RESOURCES

A. INTRODUCTION

As part of the IRP, Duke Energy Indiana analyzes the impacts associated with regulatory approval of new conservation or demand response (DR) programs, any changes in existing conservation or DR programs, or modifications to the regulatory treatment of conservation or DR. The portfolio of existing and proposed conservation and DR programs is evaluated within the IRP to examine the impact on the generation plan if the current set of programs were to continue and proposed programs were added. Additionally, all proposed and current conservation and DR programs are screened for cost-effectiveness as part of the IRP process. The projected incremental load impacts of all programs are then incorporated into the optimization process of the IRP analysis.

B. HISTORY OF DUKE ENERGY'S PROGRAMS

Duke Energy Indiana has a long history associated with the implementation of energy efficiency[9] programs. Duke Energy Indiana's energy efficiency programs are designed to help reduce demand on the Duke Energy Indiana system during times of peak load and reduce energy consumption during peak and off-peak hours. The programs fall into two categories: traditional conservation programs and demand response programs. Demand response programs include customer-specific contract options and innovative pricing programs. Implementing cost-effective conservation and demand response programs helps reduce overall long-term supply costs. Duke Energy Indiana's energy efficiency programs are primarily selected for implementation based upon their cost-effectiveness; however, there may be programs, such as a low income program, that are chosen for implementation due to desirability from an educational and/or social perspective.

Since 1991, Duke Energy Indiana has offered a variety of energy efficiency programs. Most recently, Duke Energy has offered Indiana-based customers incentive programs, low-income

[9] In the past, all programs that affected customer load shapes were classified as demand-side management or DSM programs. The term energy efficiency as used in this plan refers to both demand response and conservation programs. This replaces the term demand-side management (DSM) previously used.

services, various efficiency-related audits, education programs, and demand response programs.

C. DUKE ENERGY INDIANA'S COMMITMENT TO ENERGY EFFICIENCY

Duke Energy currently offers a variety of energy efficiency programs that create significant savings to customers. These programs have been approved over the last several years through a variety of Commission Orders and will continue to be offered until replaced in the near future by a new set of programs as mandated by the Commission and as requested by Duke Energy Indiana.

D. CURRENT ENERGY EFFICIENCY PROGRAMS

On December 9, 2009, the Commission issued its Phase II Order in Cause No. 42693. In the Phase II Order, the Commission found that jurisdictional electric utilities are required to offer certain Core Energy Efficiency Programs (Core Programs) to all customer classes and market segments. To implement these programs, the Commission determined that an independent third-party administrator (TPA) should be utilized by the electric utilities to oversee the administration and implementation of the Core Programs. The Commission also established annual gross energy savings targets for all jurisdictional electric utilities and directed utilities to offer Core Plus programs in addition to the Core Program offering to meet the mandated targets.

Until such time as the TPA begins offering Core Programs, Duke Energy Indiana offers the Core Programs[10], as well as additional Core Programs, which have been previously approved.

In September 2010, Duke Energy Indiana submitted a proposed portfolio of Core Plus energy efficiency programs for approval under Cause No. 43955. These programs were designed to augment the Core Programs offered by the TPA, are intended to meet the Commission

[10] With the exception of a commercial and industrial program for customers with loads in excess of 500 kW as those customers have been exempted from the Company's EE program offerings, pursuant to Commission Order, since 1996.

mandated efficiency targets, and offer additional opportunities for customers to save energy through both residential and non-residential programs.

Until Commission approval of the proposed Core Plus program portfolios in Cause No. 43955 described above and the implementation of the TPA-managed Core Programs, the following programs are currently being offered by Duke Energy Indiana:

Residential Programs:

- Residential Lighting
- Home Energy Audit, which includes Home Energy House Call and the Indiana National Energy Education Department (NEED) program (school education program)
- Low Income Programs
  - Refrigerator Replacement
  - Weatherization
- Residential Smart $aver® Program (incentives for high-efficiency air conditioners and heat pumps)
- Energy Star® New Construction
- Power Manager®

Small Commercial and Industrial Programs (Small C&I):

- Energy Efficient Lighting Incentive
- Energy Efficient Cooling Systems Incentive
- Energy Efficient Motors/Pumps Incentive

Non-Residential Demand Response Programs (under 500 KW):

- PowerShare®

An update on the status of the current programs was filed with the Commission on July 1, 2011 in Case No. 42963 S1.

E. ENERGY EFFICIENCY PROGRAMS

Through a combination of the Core and Core Plus programs, Duke Energy Indiana expects to reduce energy and demand on the Duke Energy Indiana system through the implementation of a broader set of new energy efficiency programs. These programs will be available for both residential and non-residential customers and include both conservation and demand response programs.

As defined in the Commission's Phase II Order, the Core Program offerings through a third-party administrator include:

Core Programs

- **Residential Lighting Program:** Incentives for ENERGY STAR® qualified lighting measures;
- **Home Energy Audit Program:** Walk-through audits and direct installation of low-cost energy saving measures;
- **Low Income Weatherization Program:** Comprehensive energy efficiency retrofits for income-qualified households;
- **Energy Efficient Schools Program:** Information and energy efficiency kits for K-12 schools, school building energy audits and access to prescriptive incentives available for commercial customers;
- **Commercial and Industrial Program:** Prescriptive incentives for common technologies such as T-8 or T-5 lighting, high efficiency motors and pumps and HVAC equipment.

The following Core Plus portfolio of programs is proposed to be offered by Duke Energy Indiana after receipt of an Order in Cause No. 43955:

Residential Programs – Core Plus

<u>Online Home Energy Calculator</u>

Program: This online program will assist residential customers in assessing their energy usage and will provide recommendations for more efficient use of energy in their homes. The program also will help identify those customers who could benefit most by investing in new energy efficiency measures, undertaking more energy efficient practices, and participating in statewide Core and Duke Energy Indiana Core Plus Programs.

To participate in this program, the customer provides information about his/her home, number of occupants, energy usage and equipment through an online energy profile survey. Duke Energy Indiana will provide an online printable report including specific energy saving recommendations.

Eligibility: Available to individually metered residential customers receiving concurrent service from the Company. Online offers will be made through the customer's Online Services Account.

Customer Incentive: The Energy Assessment is provided at no cost to the customer. Participants receive a free six-pack of compact fluorescent light bulbs (CFLs).

Personalized Energy Report (PER)™

Program: This paper-based assessment will assist residential customers in assessing their energy usage and will provide recommendations for more efficient use of energy in their homes. The program also will help identify those customers who could benefit most by investing in new energy efficiency measures, undertaking more energy efficient practices, and participating in statewide Core and Duke Energy Indiana Core Plus Programs.

The customer provides information about his/her home, number of occupants, equipment, and energy usage on a mailed energy profile survey, from which Duke Energy Indiana will perform an energy use analysis and provide a Personalized Home Energy Report including specific energy saving recommendations through the mail.

Eligibility: Available to individually metered residential customers receiving concurrent service from the Company.

Customer Incentive: The Energy Assessment is provided at no cost to the customer. Participants receive a free six-pack of CFLs.

Smart $aver® for Residential Customers

Program: The Smart $aver® Program will provide incentives to customers, builders, and heating contractors (HVAC dealers) to promote and install high-efficiency air conditioners and heat pumps with electronically commutated fan motors (ECM). The program is designed to increase the efficiency of HVAC systems in new homes and for replacements in existing homes.

Eligibility: New or existing owner-occupied residences, condominiums, and mobile homes served by Duke Energy Indiana.

Customer Incentive: Incentives (rebates) will be paid to the builder (new homes) or, for existing homes, part to the homeowner and part to the HVAC contractor.

Agency CFLs – Low Income Services (Agency Assistance Portal & CFLs)

Program: The purpose of this program is to assist low-income residential customers with energy efficiency measures to reduce energy usage by providing free CFLs to income-qualified customers. Customers can request free CFLs when applying for assistance at low income support agencies and have CFLs sent directly to their home.

Eligibility: Customer must meet the financial requirements of the Low Income agency where they are applying for assistance.

Customer Incentive: 12 free CFLs.

Refrigerator and Freezer Recycling

Program: The purpose of this program is to encourage Duke Energy Indiana customers to responsibly dispose of inefficient, but still operating, refrigerators and freezers. Participating customers will have the old unit picked up at their home to be properly recycled/disposed of by the Duke Energy Indiana program vendor. Removing an older, inefficient refrigerator can save up to 1,000 kWhs per year; removing an older, inefficient freezer can save up to 800 kWhs per year.

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Eligibility: Duke Energy Indiana customers with normal operating refrigerators/ freezers they are willing to have removed from their home.

Customer Incentive: $30 per refrigerator/ freezer.

Property Manager CFL

Program: Duke Energy Indiana coordinates with property managers to bring energy efficiency to multi-unit residential facilities by providing bulk quantities of CFLs to be installed in individual units. Property Managers will install CFLs in permanent, landlord-owned light fixtures in each rental unit. Property managers will provide a unit by unit report of CFLs installed including date of completion. The Program will increase tenant satisfaction with an energy efficient lighting upgrade and educate customers on the advantages of CFLs so they will continue to purchase these bulbs in the future.

Eligibility: Property managers whose facilities are located in Duke Energy Indiana service area are eligible to participate in the program.

Customer Incentive: No cost to the customer. The Property manager will pay the shipping fees for the bulk CFLs.

Tune and Seal

Program: Duke Energy Indiana will coordinate with trade allies (HVAC and insulation contractors) to provide energy efficiency services to homeowners in the Duke Energy Indiana service territory. Services available include: duct sealing, electric heating and cooling tune up, attic insulation and attic sealing. The specific mix of beneficial services will vary by customer, but in most cases a bundle of these improvements will be offered to the customer.

Eligibility: Duke Energy Indiana homeowners in the Company's Indiana service area are eligible to participate in the program.

Customer Incentive: The incentive amount will vary by customer depending on which bundle of services offer the most benefit to the customer. The incentive is paid based on the application that is received post installation. An average customer incentive is estimated to be $175.

Home Energy Comparison Report

Program: Monthly energy usage reports are delivered (email, web or mail) to targeted customers in the Duke Energy Indiana service territory. The report compares household usage to similar, neighboring homes and provides recommendations to lower energy usage. By making customers aware of how their usage compares to similar customers, customers who receive the report will begin to modify their behaviors and become more energy conscious.

Eligibility: Duke Energy Indiana homeowners in the Company's Indiana service area are eligible to participate in the program.

Customer Incentive: None.

Power Manager®

Program: Power Manager® is a residential load control program. The purpose of the Power Manager® program is to reduce demand by controlling residential air conditioning usage during peak demand and high wholesale price conditions, as well as generation emergency conditions during the summer months. It is available to residential customers with central air conditioning. Duke Energy Indiana attaches a load control device to the outdoor unit of a customer's air conditioner. This enables Duke Energy Indiana to cycle the customer's air conditioner off and on under appropriate conditions.

Eligibility: Power Manager® is offered to residential customers that have a functional central air-conditioning system with an outside compressor unit. Customers must agree to have the control device installed on their A/C system and to allow Duke Energy Indiana to control their A/C system during Power Manager® events.

Customer Incentive: Customers participating in this program receive a one-time enrollment incentive and a bill credit for each Power Manager® event. Customers who select Option A, which cycles their air conditioner to achieve a 1.0 kW load reduction, receive a $25 credit at installation. Customers selecting Option B, which cycles their air conditioner to achieve a 1.5 kW load reduction, receive a $35 credit at installation. The bill credit provided for each cycling event is based on: the kW reduction option selected by the customer, the number of hours of the control event and the value of electricity during the event. For each control season (May through Sept), customers will receive a minimum of $5 in bill credits for Option A and $8 for Option B.

Non-Residential Programs – Core Plus

Smart $aver® for Non-Residential Customers

Program: The purpose of this program is to encourage the installation of high-efficiency, ENERGY STAR® certified, where applicable, equipment in new and existing non-residential establishments. The program will provide incentive payments to offset a portion of the higher cost of energy efficient equipment.

The ***Prescriptive Incentive Program*** will include incentives for equipment that supplement the measures offered through the statewide Core Program. The following types of equipment will be eligible for incentives: high-efficiency lighting, high-efficiency HVAC equipment, high-efficiency motors, high efficiency pumps, variable frequency drives, chillers, thermal storage, process equipment, and foodservice equipment. Additional measures may be added for other high-efficiency equipment as determined by the Company to be cost effective on an ongoing basis.

The ***Custom Incentive Program*** will include incentives for equipment and systems that are not covered by the Prescriptive Incentive or statewide Core Programs. Examples of such systems and equipment include, but are not limited to, large scale applications and for which unique, case-by-case analysis is otherwise required, packaged projects (*i.e.,* whole building design), enhanced building envelopes, as well as high efficiency lighting, HVAC, motors, pumps, variable frequency drives, chillers, thermal storage, process and foodservice equipment/technology that are not covered within the Prescriptive Incentive and Core Programs.

Eligibility: New or existing non-residential facilities served by Duke Energy Indiana.

Customer Incentive: Incentives are available for a percentage of the cost difference between standard equipment and higher efficiency equipment. The Company may vary the percentage incentive by type of equipment and differences in efficiency in order to provide the minimum incentive needed to drive customers to purchase higher efficiency equipment and to encourage additional improvements. Over the life of the program, incentives may be reduced as customers naturally move to purchase higher efficiency equipment.

<u>Non-Residential Energy Assessments</u>

Program: The purpose of this program is to assist non-residential customers in assessing their energy usage and providing recommendations for more efficient use of energy. The program will also help identify those customers who could benefit from other non-residential Duke Energy Indiana Core Plus and statewide Core Programs.

The types of available energy assessments are as follows:

- ***Online Analysis***. The customer provides information about its facility by answering a series of online questions. Based upon the analysis of the customer's responses to the questionnaire, Duke Energy Indiana will provide an energy savings report back to the customer that includes various energy saving recommendations.

- ***Telephone Interview Analysis***. The customer provides information to Duke Energy Indiana through a telephone interview after which billing data, and if available, load profile data, will be analyzed. Duke Energy Indiana will provide an energy analysis report with an efficiency assessment along with recommendations for energy efficiency improvements. A 12-month usage history may be required to perform this analysis.

- ***On-site Audit and Analysis***. Duke Energy Indiana will cover a portion of the costs of an on-site assessment. Duke Energy Indiana will provide, consistent with the customer's desired level of investment and detail, an energy analysis report. The report will include an efficiency assessment and recommendations for efficiency improvements, tailored to the customer's facility and operation. The Company reserves the right to limit the number of on-site assessments for customers who have multiple facilities on the Duke Energy Indiana system. Duke Energy Indiana may provide additional engineering and analysis, if requested and if the customer agrees to pay the full cost of the additional assessment.

Eligibility: Available to Duke Energy Indiana served non-residential customers.

Customer Incentive: The customer's incentive is the professional assessment at a subsidized cost. Customers also will be presented with opportunities to participate in other statewide and Company energy efficiency programs as a result of the assessments.

PowerShare® CallOption

PowerShare® CallOption is a non-residential demand response program. The program has components for customers to respond with load curtailment for both emergency and economic conditions and is marketed under the name PowerShare® CallOption.

PowerShare® CallOption customers receive capacity credits monthly based on the amount of load they agree to curtail during utility-initiated events triggered by capacity problems.

Economic events are triggered on a day-ahead notification based on projections of next day market prices. Customers may "buy-through" an economic event by paying the posted hourly price for the day of the event. Emergency events are triggered by MISO and provide customers notification that requires a response within 6 hours. There is no ability to buy through for emergency events.

Eligibility: Available to Customers served under Rates LLF and HLF and can provide at least 100 kW of load curtailment. Customers without load profile metering (less than 500 kW in maximum annual 30-minute demand) must pay the incremental cost of metering. Customers must enter into a service agreement.

Customer Incentive: Program participants will receive capacity credits (premiums) for loads they agree to curtail during program events. The amount of the capacity credit will depend on the offer and level of participation selected by the customer as well as the amount of load response. For actual energy curtailed during an economic event, CallOption customers will receive energy credits (event incentives). The amount of the event incentives will depend on the energy curtailed during the event and the established strike price.

Special Curtailment Contracts

Duke Energy Indiana has contracted with several of its industrial customers to reduce their demand for electricity during times of peak system demand. Currently, two contracts are in effect. These contracts allow Duke Energy Indiana to provide "as available" or "non-firm" service to those customers. Some of these contracts date back to the late 1980s and early 1990s. By the terms of these contracts, Duke Energy Indiana can interrupt those customers at times of system peak, high marginal prices, or during times of system emergencies.

These interruptible contracts contain "buy-through" features except during times of system emergency. The Company currently expects and plans for a 194 MW reduction in the load forecasts for this "as available" load. This is projected to remain available and under contract over the forecast horizon, although there is a risk that customers will not renew the interruptible provisions of their contracts when they expire.

F. PROJECTED IMPACTS

For the purpose of this IRP, projected impacts from both Core and Core Plus programs were included for 2012 and beyond. Table 4-A below provides the base case projected impacts from the proposed Core and Core Plus conservation programs, special contracts, and demand response programs. This case assumes full compliance with the Phase II Order.

Table 4-A: LOAD IMPACTS OF EE PROGRAMS - BASE CASE

	Conservation Program Load Impacts				Demand Response Program Load Impacts				
	MWh			MW	MW				Summer Peak
Year	Core Programs	Core Plus Programs	Total MWh	Total MW	PowerShare	Power Manager	Interruptible	Total DR	Total MW
2011	59,424	61,414	120,837	13.2	179.2	46.2	194.1	419.5	432.7
2012	157,890	173,720	331,611	37.3	160.3	55.4	194.1	409.8	447.1
2013	298,260	309,077	607,337	68.9	167.8	61.3	194.1	423.2	492.1
2014	459,204	453,535	912,740	103.8	176.1	66.2	194.1	436.4	540.2
2015	624,842	611,002	1,235,844	139.7	184.9	68.5	194.1	447.5	587.2
2016	823,307	805,041	1,628,348	182.3	189.6	68.6	194.1	452.3	634.6
2017	1,044,270	1,021,150	2,065,420	231.9	189.6	68.7	194.1	452.4	684.3
2018	1,293,182	1,264,658	2,557,841	287.1	189.6	68.7	194.1	452.4	739.5
2019	1,554,899	1,520,516	3,075,415	345.2	189.6	68.7	194.1	452.4	797.6
2020	1,558,626	1,524,151	3,082,776	345.0	189.6	68.7	194.1	452.4	797.4
2021	1,575,263	1,540,394	3,115,657	349.7	189.6	68.7	194.1	452.4	802.1
2022	1,595,719	1,560,491	3,156,210	354.2	189.6	68.7	194.1	452.4	806.6
2023	1,616,531	1,580,953	3,197,483	358.9	189.6	68.7	194.1	452.4	811.3
2024	1,640,533	1,604,507	3,245,041	363.1	189.6	68.7	194.1	452.4	815.5
2025	1,657,716	1,621,084	3,278,801	368.0	189.6	68.7	194.1	452.4	820.4
2026	1,678,639	1,641,475	3,320,113	372.6	189.6	68.7	194.1	452.4	825.0
2027	1,699,325	1,661,711	3,361,036	377.2	189.6	68.7	194.1	452.4	829.6
2028	1,726,216	1,688,241	3,414,457	358.6	189.6	68.7	194.1	452.4	811.0
2029	1,747,791	1,709,469	3,457,259	364.1	189.6	68.7	194.1	452.4	816.5
2030	1,772,046	1,733,094	3,505,139	369.1	189.6	68.7	194.1	452.4	821.5
2031	1,788,977	1,749,444	3,538,420	372.6	189.6	68.7	194.1	452.4	825.0

The Company also prepared an alternate energy efficiency scenario that provides potential impacts if all of the Core and Core Plus programs are not achieved. The scenario was developed primarily to show the impact on the resource need if regulatory approval is delayed or adoption rates of these programs are lower than currently planned. Table 4-B below provides the projected energy efficiency impacts of this lower adoption rate of energy efficiency programs.

Table 4-B: LOAD IMPACTS OF EE PROGRAMS - LOW CASE									
	Conservation Program Load Impacts				Demand Response Program Load Impacts				
	MWh			MW	MW				Summer Peak
Year	Core Programs	Core Plus Programs	Total MWh	Total MW	PowerShare	Power Manager	Interruptible	Total DR	Total MW
2011	59,424	61,414	120,837	13.2	179.2	46.2	194.1	419.5	432.7
2012	157,890	173,720	331,611	37.3	160.3	55.4	194.1	409.8	447.1
2013	298,260	309,077	607,337	68.9	167.8	61.3	194.1	423.2	492.1
2014	459,204	453,535	912,740	103.8	176.1	66.2	194.1	436.4	540.2
2015	624,842	611,002	1,235,844	139.7	184.9	68.5	194.1	447.5	587.2
2016	769,805	752,726	1,522,531	170.4	189.6	68.6	194.1	452.3	622.7
2017	911,743	891,556	1,803,299	202.4	189.6	68.7	194.1	452.4	654.8
2018	1,056,093	1,032,799	2,088,892	234.4	189.6	68.7	194.1	452.4	686.8
2019	1,201,283	1,174,720	2,376,003	266.6	189.6	68.7	194.1	452.4	719.0
2020	1,204,163	1,177,528	2,381,690	266.5	189.6	68.7	194.1	452.4	718.9
2021	1,217,016	1,190,077	2,407,093	270.1	189.6	68.7	194.1	452.4	722.5
2022	1,232,820	1,205,603	2,438,424	273.6	189.6	68.7	194.1	452.4	726.0
2023	1,248,899	1,221,412	2,470,311	277.2	189.6	68.7	194.1	452.4	729.6
2024	1,267,443	1,239,610	2,507,053	280.5	189.6	68.7	194.1	452.4	732.9
2025	1,280,718	1,252,417	2,533,135	284.3	189.6	68.7	194.1	452.4	736.7
2026	1,296,882	1,268,170	2,565,052	287.8	189.6	68.7	194.1	452.4	740.2
2027	1,312,864	1,283,804	2,596,668	291.4	189.6	68.7	194.1	452.4	743.8
2028	1,333,639	1,304,301	2,637,940	277.0	189.6	68.7	194.1	452.4	729.4
2029	1,350,307	1,320,701	2,671,008	281.2	189.6	68.7	194.1	452.4	733.6
2030	1,369,046	1,338,953	2,707,999	285.1	189.6	68.7	194.1	452.4	737.5
2031	1,382,127	1,351,585	2,733,712	287.9	189.6	68.7	194.1	452.4	740.3

G. EXISTING ENERGY EFFICIENCY PROGRAMS, HISTORICAL PERFORMANCE

Duke Energy Indiana has been aggressive in the planning and implementation of energy efficiency programs. As a result of the conservation efforts through the year 2010, Duke Energy Indiana has reduced summer peak demand by a projected 190 MW and annual energy use by 774 gigawatt-hours (GWh). These load reductions do not include the impacts of any demand response programs, including the Power Manager direct load control program, interruptible contracts, or the PowerShare® program.

The forecast of loads provided in Chapter 3 incorporates the effects of these historical impacts in the baseline forecast, but does not include any incremental impacts from the existing programs.

H. PROGRAM SCREENING, ASSUMPTIONS, AND DATA SOURCES

All energy efficiency programs are evaluated for consideration of inclusion in the Integrated Resource Plan using the DSMore software and must be cost-effective.

The cost-effectiveness tests are calculated by comparing the net present values of streams of financial costs vs. benefits. The programs are valued against the avoided costs. The resultant benefit/cost ratios, or tests, provide a summary measure of the program's cost effectiveness and its projected load impacts. In general, the criteria used for screening energy efficiency programs for Duke Energy Indiana is the Utility Cost Test, which compares utility benefits to utility costs and does not consider other benefits such as participant savings or societal impacts.

To reflect the impacts of the overall energy efficiency activity, all program impacts are summed together and incorporated into the IRP modeling analysis (see Chapter 8). Further information on the estimated costs of the programs may be found in the Short-Term Implementation Plan. Table 4-C summarizes the cost-effectiveness results for the Core Plus Programs.

Table 4-C: Program Cost Effectiveness Test Results of Core Plus Programs

RESIDENTIAL CUSTOMER PROGRAMS	**UCT**	**TRC**	**RIM**	**Participant**
Online Home Energy Calculator	2.05	2.96	0.92	-
Personalized Energy Report	2.90	4.86	1.10	-
Smart$aver for Residential Customers - Central Air Conditioner	1.62	1.23	1.00	1.69
Smart$aver for Residential Customers - Heat Pump	3.67	2.78	1.57	2.97
Agency CFLs - Low Income Services (Agency Assitance Portal & CFLs)	4.75	13.21	1.25	-
Refrigerator Recycling	3.14	3.73	1.34	-
Freezer Recycling	1.58	1.77	0.95	-
Property Manager CFL	4.10	9.11	1.24	-
Tune and Seal	1.49	7.72	0.94	-
Home Energy Comparison Report	2.14	2.14	1.04	-
Power Manager	4.36	6.28	4.36	-
NON-RESIDENTIAL CUSTOMER PROGRAMS				
Smart$aver for Non-Residential Customers - HVAC	5.17	2.48	1.89	1.83
Smart$aver for Non-Residential Customers - Lighting	5.40	2.20	1.34	2.40
Smart$aver for Non-Residential Customers - Motors/Pumps/VFD	15.06	3.47	1.65	3.15
Smart$aver for Non-Residential Customers - Food Service	7.77	2.01	1.43	2.05
Smart$aver for Non-Residential Customers - Process Equipment	14.23	8.72	1.52	9.70
Smart$aver for Non-Residential Customers - Custom	7.73	1.88	1.46	1.89
Non-Residential Energy Assessments[1]	N/A	N/A	N/A	N/A
PowerShare CallOption	3.95	38.56	3.95	-

1 - Non-Residential Energy Assesments do not offer direct benefits, therefore Cost Effectiveness Tests do not apply

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5. SUPPLY-SIDE RESOURCES

A. INTRODUCTION

The phrase "supply-side resources" encompasses a wide variety of options that Duke Energy Indiana uses to meet the energy needs of its customers, both reliably and economically. These options can include existing generating units, repowering options for these units, existing or potential power purchases, and new utility-owned generating units (conventional, advanced technologies, and renewables). The IRP process assesses the possible supply-side resource options that would be appropriate to meet the system needs by considering their technical feasibility, fuel availability and price, length of the contract or life of the resource, construction or implementation lead time, capital cost, operation and maintenance (O&M) cost, reliability, and environmental effects. This chapter will discuss in detail the specific options considered, the screening processes utilized, and the results of the screening processes.

B. EXISTING UNITS

1. Description

The total installed net summer generation capability owned or purchased by Duke Energy Indiana is currently 6,848 MW.[11] This capacity consists of 5,045 MW of coal-fired steam capacity, 285 MW of natural gas-fired combined cycle capacity, 52 MW of hydroelectric capacity, and 1,448 MW of natural gas-fired or oil-fired peaking capacity. Also included are purchase power agreements with Benton County Wind Farm (100 MW, with 10 MW contribution to peak) and the City of Logansport (8 MW).

The steam capacity located at four stations is comprised of sixteen coal-fired units. The combined cycle capacity consists of a "single unit" comprised of three natural gas-fired combustion turbines and two steam turbines located at the Noblesville Station. The hydroelectric generation is a run-of-river facility comprised of three units on the Ohio

[11] Excluding the ownership interests of Indiana Municipal Power Agency (IMPA) (155 MW) and Wabash Valley Power Association, Inc. (WVPA) (155 MW) in Gibson Generating Station Unit No. 5, but including the non-jurisdictional portion of Henry County Generating Station (50MW) associated with a long-term contract).

River. The peaking capacity consists of seven oil-fired diesels located at two stations, seven oil-fired CT units located at two stations, and sixteen natural gas-fired CTs located at four stations. One of these natural gas-fired units has oil back-up. Duke Energy Indiana also provides steam service to one industrial customer from its Cayuga Station, which reduces Duke Energy Indiana's net capability to serve electric load by approximately 20 MW.

The largest units on the Duke Energy Indiana system are the five Gibson units at about 620-630 net MW each, and the two Cayuga units at about 500 MW each. The smallest coal-fired units on the system are three 85 MW units at the Wabash River Station. The large variation in unit size of the coal-fired units on Duke Energy Indiana's system is mainly due to the vintage of the units.

The peaking units on the Duke Energy Indiana system range in size from 2-3 MW oil-fired internal combustion units at Wabash River and Cayuga to 115 MW natural gas-fired CTs at Wheatland.

Information concerning the existing generating units as of the date of this filing is contained in Table 5-A. This table lists the name and location of each station, unit number, type of unit, installation year, net dependable summer and winter capability (Duke Energy Indiana share), and current environmental protection measures.

The net dependable summer and winter capability (Duke Energy Indiana share) by plant is shown in Appendix F in Table F-4. A listing of the units grouped by fuel type (*i.e.*, coal, gas, oil, water and wind) is shown in Appendix F in Table F-5. Tables F-3, F-4 and F-5 are standardized templates agreed upon by the Indiana utilities involved in the IRP Investigation, docketed as Cause No. 43643. The approximate fuel storage capacity at each of the coal- and oil–fired generating stations is shown in Figure A-6 in Appendix A.

Long term purchases are shown in Figure A-7 in Appendix A. Duke Energy Indiana has contracted with Benton County Wind Farm for a 20 year wind PPA for 100 MW (10

MW capacity value) expiring April 2028. Effective July 1, 2009, Duke Energy Indiana signed a 10-year contract to purchase all of the Logansport Unit #6 capacity (approximately 8 MW) from the City of Logansport.

2. Availability

The unplanned outage rates of the units used for planning purposes were derived from the historical Generating Availability Data System (GADS) data on these units. Planned outages were based on maintenance requirement projections as discussed below. This IRP assumes the Duke Energy Indiana generating units generally will continue to operate at their present availability and efficiency (heat rate) levels. However, adjustments to present operating conditions were made for future environmental controls.

3. Maintenance Requirements

A comprehensive maintenance program is important in providing reliable, low-cost service. The following tabulation outlines the general guidelines governing the preparation of a maintenance schedule for existing units operated by Duke Energy Indiana. It is anticipated that future units will be governed by similar guidelines.

Scheduling Guidelines for Duke Energy Indiana Units

(1) Major maintenance on base load units 400 MW and larger is to be performed at intervals from six to twelve years (Cayuga 1-2 and Gibson 1-5).

(2) Major maintenance on intermediate-duty units between 140 MW and 400 MW is to be performed at approximately six to fifteen year intervals (Gallagher 1-4, Noblesville Repowering, and Wabash River 2-6).

(3) Due to the more limited run-time of the peaking units, judgment and predictive maintenance will be used to determine the need for major maintenance (Wabash 7, Cayuga 4, Madison 1-8, Henry County 1-3, Wheatland 1-4, Connersville 1-2, Miami-Wabash 1-3, 5 & 6 and Cayuga 3).

In addition to the regularly scheduled maintenance outages, Duke Energy Indiana continues the maintenance program during “availability outages.” Availability outages are unplanned, opportunistic, proactive short duration outages aimed at addressing summer reliability. At appropriate times, when it is economic to do so, units may be taken out of service for generally short periods of time (*i.e*., less than nine days) to perform maintenance activities. This enhancement in the maintenance philosophy reflects the focus on ensuring generation is available during peak periods (*e.g.*, the summer months). Generating station performance is now measured primarily by plant availability during higher price time frames. Moreover, targeted, plant-by-plant assessments have been performed annually to determine the causes of all forced outages that occur which enable the Company to better focus actions during maintenance and availability outages. Finally, system-wide and plant-specific contingency planning was instituted to ensure an adequate supply of labor and materials when needed, with the goal of reducing the length of any forced outages.

The general maintenance requirements for all of the existing generating units were entered into the models, which were used to develop the IRP.

4. Fuel Supply

Duke Energy Indiana generates energy to serve its customers through a diverse mix of fuels primarily consisting of coal, natural gas, and fuel oil. In addition, the Company generates a small portion of its energy from renewable resources, such as hydro and wind (through a contract with the Benton County Wind Energy Project). Furthermore, the Company has access to an even broader array of fuels through its participation in the MISO market, which encompasses a variety of generation sources in more than 12 Midwestern states. Finally, Duke Energy Indiana considers Energy Efficiency to be a “fifth fuel” which plays an important role in serving our customers, as discussed in more detail in Chapter 4.

The Company continues to generate a majority of its energy through use of coal, with usage dictated by the relative prices of coal as compared against the alternative fuels options in the economic dispatch process. The percentages of Duke Energy Indiana's generating capacity shown in Table F-5 in Appendix F by fuel type are 73.9% coal, 22.7% natural gas, 2.7% oil, and 0.8% hydro.

<u>Coal</u>

Over 90% of Duke Energy Indiana's total energy is generated from burning coal. In evaluating any purchase of coal for use by Duke Energy Indiana, the Fuels Department considers three primary factors: (1) the reliability of supply of the coal in quantities sufficient to meet Duke Energy Indiana generating requirements, (2) the quality of the coal required to meet environmental regulations and/or manage station operational constraints, and (3) the lowest reasonable cost of the coal as compared to other purchase options. The "cost" of the coal is defined as purchase price of the coal at the delivery point, plus the transportation costs to get the coal to the applicable station, plus the evaluated sulfur content of the coal, and finally the evaluated economic impacts of the coal quality on station operations.

To aid in fuel supply reliability, Duke Energy Indiana has fuel procurement policies (*e.g.* contract versus short term ratios, inventory target levels) that guide decisions on when the Fuels Department should enter the market to procure certain quantities and types of fuel for the stations. These policies are viewed in the context of economic and market forecasts and probabilistic dispatch models to collectively provide the Company with a five-year strategy for fuel purchasing. The strategy provides a guide to meet the goal of having a reliable supply of low cost fuel.

To enhance fuel supply reliability and mitigate supply risk, Duke Energy Indiana purchases coal from multiple mines in the geographic area of our stations. Duke Energy Indiana further maintains stockpiles of coal at each station to guard against short-term supply disruptions. In determining the amount of inventory to maintain at each station, the Company evaluates the probability of disruptions and the possible duration of events that will affect the coal supply. This evaluation process balances the cost of sufficient coal supply at each station against the risk of supply disruptions.

Currently, coal supplied to Duke Energy Indiana's base load coal stations primarily comes from Indiana and Illinois. These states are rich in coal reserves with decades of remaining economically recoverable reserves. Over 90% of the coal supplied to Duke Energy Indiana's base load stations is currently under long-term contracts. Prior to entering long-term commitments with coal suppliers, the Company evaluates such things as the financial stability, performance history, mining plans, estimated reserves and overall reputation of the suppliers. By entering into long-term commitments with suppliers, Duke Energy Indiana further protects itself from risk of insufficient coal availability while also giving suppliers the needed financial stability to allow them to make capital investments in the mines and hire the labor forces needed to mine the coal and meet our coal requirements. If the Company were to try and purchase all of its requirements on the short-term open market, the Company likely would have severe difficulties in finding sufficient coal for purchase to meet our needs due to the inability of the mines to increase production to accommodate 13-16 million annual tons in such a short timeframe. The current Duke Energy Indiana supply portfolio includes ten long-term coal supply agreements. Under these contracts, the Company buys the coal at the mine. Thus, the contracts do not restrict our ability to move the coal to the various Duke Energy Indiana coal-fired generating stations as necessary to meet generation requirements. This arrangement allows for greater flexibility in meeting fluctuations in generating demand and any supply or transportation disruptions.

For our intermediate load coal stations, such as Gallagher Station and Wabash River, we are pursuing a much shorter term procurement policy due to existing environmental compliance requirements (*e.g.* NSR), the uncertainties around future environmental regulations (*e.g.* CSAPR and Utility MACT) and the potential for retirement of these aging units. Currently, we are sourcing low-sulfur coal for these intermediate stations on a short-term basis, typically one-year or less, from such places as Colorado, Wyoming, Indiana and West Virginia.

Duke Energy Indiana fills out the remainder of its fuel needs for both base load and intermediate load stations with spot coal purchases. Spot coal purchases are used to 1) take advantage changing market conditions that may lead to low priced incremental tonnage, 2) test new coal supplies, and 3) supplement coal supplies during periods of increased demand for generation or during contract delivery disruptions.

Natural Gas

The use of natural gas by Duke Energy Indiana for electric generating purposes has generally been limited to peaking and combined cycle unit applications. Natural gas is currently purchased on the spot market and is typically transported (delivered) using interruptible transportation contracts or as a bundled delivered product (spot natural gas plus transportation), although the company does have one firm transportation contract on the Midwestern Gas pipeline for gas delivery to the Wheatland Generation Station (and/or other future generating stations). In this IRP, the future CC fuel cost incorporates both the natural gas commodity price and firm transportation cost, whereas, the future CT fuel cost includes the natural gas commodity price and interruptible transportation cost.

The availability of natural gas is not expected to be a problem in the long-term. The US natural gas supply picture has improved dramatically since 2009 with major technological improvements in the development of shale resources. Dry gas production from shale reserves climbed from one trillion cubic feet in 2006 to just under five trillion cubic feet in 2010, and now accounts for about 25% of US production. The US Geological Survey now estimates there are about 750 trillion cubic feet of “technically recoverable” shale gas reserves in the United States. The growth in shale production has outpaced demand over the past two years leading to gas prices in the $4/MMbtu range. However, there is a shift in new capital deployment toward drilling either liquids-rich shale gas or directly into oil shales. The significant premium in oil prices to gas is also leading to a strong recovery in the US petrochemical sector and other gas-intensive industrial customers. The power sector is poised to add a substantial increase in gas demand over the next five to ten years as utilities weigh retirements of uncontrolled coal units in response to a host of new environmental rules. It is expected gas prices will increase as the supply/demand balance tightens. Due to air and water environmental concerns associated with the fracturing of the shale formations, the major risk to the natural gas supply and pricing will depend on how the extraction process is ultimately regulated.

Oil

Duke Energy Indiana uses fuel oil for starting coal-fired boilers, and for flame stabilization during low load periods. Some CT peaking facilities are also oil-fired or use oil as a back-up fuel. At Cayuga Unit 4, oil is a secondary fuel source for the station. Oil supplies, purchased on an as-needed basis, are expected to be sufficient to meet needs for the foreseeable future.

5. Fuel Prices

Fuel prices for both existing and new units utilized in this IRP were developed using a combination of observable forward market prices and longer term market fundamentals. Wood Mackenzie performed the long term fundamentals analysis with input from Duke subject matter experts. The projected fuel prices are considered by Duke Energy Indiana and Wood Mackenzie to be trade secrets and proprietary competitive information.

6. Condition Assessment

Duke Energy Indiana continues to implement its engineering condition assessment programs. The intent is to maintain the generating units, where economically feasible, at their current levels of efficiency and reliability.

In this IRP, the condition assessment has driven the assumption of the retirement of the older CT units at Miami-Wabash and Connersville. The 2021 retirement date is not a firm date, but by 2021 these CTs will be over 50 years old and at or near the end of their lives. Each CT is tested once per year to meet the MISO reliability requirements. Given the age of these turbines and the availability of spare parts, if significant maintenance is required to meet the reliability requirements, the retirement decision on a specific unit could accelerate. As an example, Miami Wabash Unit 4 was retired in 2010 following generator equipment failures.

7. Efficiency

Duke Energy Indiana evaluates the cost-effectiveness of maintenance options on various individual components of the existing generating units. If the potential maintenance options prove to be cost-justified and pass an NSR screen, they are budgeted and generally undertaken during a future scheduled unit maintenance outage. However, due to modeling limitations, the large number and wide-ranging impacts of these individual options made it impossible to include these numerous smaller-scale options within the context of the IRP integration process. The routine economic evaluation of these smaller-scale options is consistent with that utilized in the overall IRP process. As a result, the outcome and validity of this plan has not been affected by this approach.

Duke Energy Indiana routinely monitors the efficiency and availability of its generating units. Based on those observations, projects that are intended to maintain the long-term performance of the units are planned, evaluated, selected, budgeted, and executed. Such routine periodic projects might include but not be limited to turbine-generator overhauls; condenser cleanings and condenser system repairs, such as vacuum pump and circulating water pump rebuilds; burner replacements, coal pulverizer overhauls, and combustion system tuning; secondary air heater basket material replacements; boiler tube section replacements; and pollution control equipment maintenance, such as selective catalytic reduction (SCR) catalyst replacement and flue gas desulfurization (FGD) limestone slurry pump rebuilds. In addition, Duke Energy Indiana looks for opportunities to improve the overall performance of the units, including targeted projects for generating unit efficiency improvements.

As mentioned above, any plans to increase fossil fuel generation efficiency must be viewed in light of regulatory requirements, specifically the NSR rules defined by the EPA. These regulatory requirements are subject to interpretation and change over the years. Within the context of such requirements, Duke Energy Indiana plans routine maintenance projects, which may maintain or increase the efficiency of its generating units.

C. EXISTING NON-UTILITY GENERATION

Some Duke Energy Indiana customers have electric production facilities for self-generation, peak shaving, or emergency back-up. Non-emergency self-generation facilities are normally of the baseload type and are generally sized for reasons other than electric demand (*e.g.*, steam or other thermal demands of industrial processes or heating). Peak shaving equipment is typically oil- or gas-fired and generally is used only to reduce the peak billing demand. Depending on whether it is operated at peak, this capacity can reduce the load otherwise required to be served by Duke Energy Indiana which, like Demand Response programs, also reduces the need for new capacity.

D. EXISTING POOLING AND BULK POWER AGREEMENTS

Duke Energy Indiana is directly interconnected with eight other balancing authorities (American Electric Power, Louisville Gas and Electric Energy, Ameren, Hoosier Energy, Indianapolis Power and Light, Northern Indiana Public Service Company, and Vectren), as well as Duke Energy Ohio.

Duke Energy Indiana participates in the MISO energy markets. MISO ensures the safe, cost-effective delivery of electric power across all or parts of 12 Midwest states. As a Regional Transmission Organization, MISO assures consumers of unbiased regional grid management and open access to the transmission facilities under MISO's functional supervision.

Duke Energy Indiana co-owns Gibson Unit 5 with WVPA and IMPA, and currently provides Reserve Capacity and Back-up Energy for this unit. The modeling for this Reserve Capacity and Reserve Energy consists of representing 100% of Gibson 5 capacity and including the load for WVPA and IMPA that corresponds to their capacity shares at 100% load factor through

December 31, 2014 when the contract expires. Duke Energy Indiana periodically meets with WVPA and IMPA to discuss the operation of Gibson 5 and to exchange IRPs.

Duke Energy Indiana has several bulk power agreements currently in place. These agreements allow Duke Energy Indiana to provide/ purchase energy and/or capacity to/from other utilities or facilities.

- WVPA - As part of the Marble Hill settlement between WVPA and Duke Energy Indiana, Duke Energy Indiana has a contract to provide 70 MW of firm capacity and energy to WVPA for up to 35 years (*i.e.*, through 2032). There are also contracts to provide 50 MW of firm capacity and energy to WVPA through 2025 and 150 MW of firm capacity and energy to WVPA through 2026.

- IMPA - Duke Energy Indiana has a contract to provide IMPA with 50 MW of firm capacity and energy through May 31, 2017.

- Hoosier Energy - Duke Energy Indiana has two contracts with Hoosier Energy. The capacity of each contract is 100 MW. The period of the first contract is through December 31, 2017, and the period of the second contract is through December 31, 2023. A third contract for 50 MW with Hoosier Energy is scheduled to begin on January 1, 2016, and ends on December 31, 2025.

- Henry County Station – Duke Energy Indiana has a 20-year, 50 MW contract associated with the Henry County Station, which reduces the capacity available for Duke Energy Indiana native load customers at this station by this amount. (This 50 MW has been jurisdictionalized out of Duke Energy Indiana’s retail rates).

- Benton County Wind Farm - The Company has a contract to purchase the energy produced by 100 MW of wind turbine energy from the Benton County Wind Energy Project (discussed in more detail later).

- Logansport - Effective July 1, 2009, Duke Energy Indiana purchased all of the Logansport Unit #6 capacity (approximately 8 MW) from the City of Logansport. The contract agreement is scheduled to end December 31, 2018.

- Other - Duke Energy Indiana has both full and partial requirements contracts to serve a number of other municipals in Indiana, although some of these cities elected to join IMPA, which terminated their contracts with Duke Energy Indiana.

With the exception of the Gibson 5 Reserve Capacity and Energy contract, all of the wholesale load obligations are modeled as firm load in the IRP throughout the study period based on the assumption that these contracts will either be renewed or new contracts will be signed.

No additional capacity purchases were necessary for the summer of 2011 to meet reserve margin requirements due to the return to service of Wabash River units 2, 3, and 5 as a result of the 7^{th} Circuit Court of Appeals decision vacating the May 29, 2009 judgment which previously forced those units to be shut down.

Additionally, Duke Energy Indiana routinely executes energy hedge trades, which provide Duke Energy Indiana price certainty and reduce customers' exposure to energy price volatilities. Further information concerning power purchase contracts may be found in the Short-Term Implementation Plan contained in Appendix E.

E. NON-UTILITY GENERATION AS FUTURE RESOURCE OPTIONS

It is Duke Energy Indiana's practice to cooperate with potential cogenerators and independent power producers. A major concern, however, exists in situations where customers would be subsidizing generation projects through higher than avoided cost buyback rates, or the safety or reliability of the electric system would be jeopardized. Duke Energy Indiana typically receives several requests each year for independent/small power production and cogeneration buyback rates. Currently, on the Duke Energy Indiana system, prospective cogenerators are given the interconnection requirements and the current rates under Standard Contract Rider No. 50 - Parallel Operation for Qualifying Facility.

A customer's decision to self-generate or cogenerate is, of course, based on economics. Customers know their costs, profit goals, and competitive positions. The cost of electricity is just one of the many costs associated with the successful operation of their business. If customers believe they can lower their overall costs by self-generating, they will investigate this possibility on their own. There is no way that a utility can know all of the projected costs and/or savings associated with a customer's self-generation. However, when a customer investigates self-generation, they will usually contact the utility for an estimate of electricity buyback rates. Cogeneration and small power production are generally uneconomical for most customers.

For these reasons, Duke Energy Indiana does not attempt to forecast specific megawatt levels of this activity. Cogeneration facilities built to affect customer energy and demand served by the utility are captured in the load forecast. Cogeneration built to provide supply to the electric network represents additional regional supply capability. As purchase contracts are signed, the resulting energy and capacity supply will be reflected in future plans.

Duke Energy has direct involvement in the cogeneration area. Duke Energy Generation Services, an unregulated affiliate of Duke Energy Indiana, builds, owns, and operates cogeneration and trigeneration facilities for industrial plants, office buildings, shopping centers, hospitals, universities, and other major energy users that can benefit from combined heating/cooling and power production economies.

Other supply-side options such as simple-cycle combustion turbines, combined cycle units, coal-fired units, and/or renewables could represent potential non-utility generating units, power purchases, or utility-owned units. At the time when Duke Energy Indiana initiates the acquisition of new capacity, a decision will be made as to the best source.

F. SUPPLY-SIDE RESOURCE SCREENING

In the screening analysis for the IRP, a diverse range of technology choices utilizing a variety of different fuels were considered including pulverized coal (PC) units with and without carbon capture and sequestration, IGCC with and without carbon capture and sequestration, CT, CC units, and nuclear units. In addition, renewable technologies such as wind, biomass, and solar were evaluated.

For the 2011 IRP screening analyses, technology types were screened within their own general category of baseload, peaking/intermediate, and renewable. The ultimate goal of the screening process was to pass the best alternatives from each of these three categories to the integration process, as opposed to having all renewable technologies screened out because they did not fare well against the more conventional technologies on the final screening curve. As in past years, the reason for performing these initial screening analyses is to determine the most viable and cost-effective resources for further evaluation. This is necessary because of the size of the problem to be solved and computer execution time limitations of the System Optimizer capacity planning model (described in detail in Chapter 8).

1. Process Description

Information Sources

The cost and performance data for each technology being screened are based on research and information from several sources. These sources include, but may not be limited to, the following: the Duke Energy New Generation Team, Duke Energy Emerging Technologies, Duke Energy Analytical and Investment Engineering group, the Electric Power Research Institute (EPRI) Technology Assessment Guide (TAG®), and studies performed by and/or information gathered from external sources. In addition, operating cost estimates are developed internally by Company personnel utilizing data from sources such as those mentioned above. Fuel cost estimates are generally from outside consultants, and for this IRP process, Wood Mackenzie was the consultant. The EPRI information along with any information or estimates from external studies are not site-specific, but generally reflect the costs and operating parameters for installation in the Midwest.

Finally, every effort is made to ensure that the cost and other parameters are current and include similar scope across the technology types being screened. Attempts to keep cost estimates consistent across a variety of technology types in today's raw material, manufactured equipment, and commodity markets remains very difficult and is the reason new generation cost estimate components are reviewed annually.

Technical Screening

The first step in the supply-side screening process was a technical screening of the technologies to eliminate those that have technical limitations, commercial availability issues, or are not feasible in the Duke Energy Indiana service territory. A brief explanation of the technologies excluded at this point and the logic for their exclusion follows:

- Geothermal was eliminated because there are no suitable geothermal resources in the region to develop into a power generation project.
- Advanced Battery Storage technologies (Lead acid, Lithium-ion, Sodium Ion, Zinc Bromide, Flywheels) remain relatively expensive and are generally suitable for small-scale emergency back-up and/or power quality applications with short-term duty cycles of three hours or less. In addition, the current energy storage capability is generally 100 MWh or less. Research, development, and demonstration continue within Duke Energy, but this technology is generally not commercially available on a larger utility scale. Currently Duke Energy is installing 36 MW advanced acid lead batteries at the Notrees wind farm located in Colorado that is scheduled for start-up in 2012 to learn more about energy storage. Duke Energy also has 2 Community Energy Storage system test stations at the Envision Energy Center in Charlotte (24 kWh).
- Compressed Air Energy Storage (CAES), although demonstrated on a utility scale and generally commercially available, is not a widely applied technology

and remains relatively expensive. This is due to the fact that suitable sites that possess the proper geological formations and conditions necessary for the compressed air storage reservoir are relatively scarce.

- Small and medium nuclear reactors are generally limited to less than 300 MW. The NRC (Nuclear Regulatory Commission) has not licensed any small nuclear reactor designs at this point in time. Several designs including those by GE, B&W and Westinghouse may seek licensing in 2012 and 2013.
- Fuel Cells, although originally envisioned as being a competitor for combustion turbines and central power plants, are now targeted to mostly distributed power generation systems. The size of the distributed generation applications ranges from a few kilowatts to tens of megawatts in the long-term. Cost and performance issues have generally limited their application to niche markets and/or subsidized installations. While a medium level of research and development continues, this technology is not commercially available for utility-scale application.
- Poultry waste and hog waste digesters remain relatively expensive and are relatively small, capable of generating 500 – 600 MWh per year. Research, development, and demonstration continue, but these technologies are generally not commercially available on a larger utility scale.
- Combined Cycle G-Class demonstrated on a utility scale is comparable to the F-Class with efficiency and remains limited with lack of experience. The combined cycle G-class technology is larger in size and is designed to operate primarily as base load and not suitable for the anticipated cycling operation.

The interest in clean air emissions has led to a deeper investigation into renewable technologies. The renewable technologies that were added to the screening analyses for this IRP include:

- Fluidized Bed Biomass
- Solar Photovoltaic
- Wind
- Hydro

Economic Screening

In the supply-side screening analysis, the fuel prices for coal and gas, and emission allowance prices were obtained from the Company's 2011 fundamentals forecast. The biomass fuel price was derived from various vendor fuel and delivery prices. The biomass fuel price may vary in the future as more utilities begin to use biomass fuel.

The technologies were screened using relative dollar per kilowatt-year versus capacity factor screening curves. The screening within each general class as well as the final screening across the general classes used a spreadsheet-based screening curve model developed by Duke Energy. The model is considered confidential and proprietary information by Duke Energy.

This screening curve analysis model calculates the fixed costs associated with owning and maintaining a technology type over its lifetime and computes a levelized fixed $/kW-year value. Then the variable costs, such as fuel, variable O&M, and emission costs associated with operating the technology at full load, over its lifetime are calculated and the present worth is computed back to the start year. This levelized operating $/kW-year is added to the levelized fixed $/kW-year value to arrive at a total owning and operating value at 100% utilization in $/kW-year. A line is then drawn between each interval between 0% and 100% capacity factor which results in a "screening curve" specific to each technology.

This process is repeated for each supply technology to be screened resulting in a family of lines (curves). The lower envelope along the curves represents the least costly supply options for various capacity factors or unit utilizations. Some of the renewable resources with limited energy output, such as wind and solar, have screening curves limited to their expected operating range on the individual graphs.

Lines generally can be eliminated from further analysis if they never become part of the lower envelope, or they become part of the lower envelope at capacity factors outside of their relevant operating ranges. It is concluded these options have a very low probability of being part of the least cost solution.

2. Screening Results

While these estimated levelized screening curves provide a reasonable basis for initial screening of technologies, simple levelized screening has limitations. In isolation, levelized cost information has limited applicability in decision-making because it is highly dependent on the circumstances being considered. A complete analysis of feasible technologies must include consideration of the interdependence of the technologies and Duke Energy Indiana's existing generation portfolio, as is performed within the System Optimizer and Planning and Risk analyses. The technologies were screened with consideration of allowance prices and CO_2 emissions.

Baseload Technologies

Figure A-1 in Appendix A shows the screening curves for the baseload category of screening. The following baseload technologies are found on this chart:

1) 2x1,117 MW Nuclear
2) 800 MW Supercritical Coal
3) 800 MW Supercritical Coal with Carbon Capture and Storage at 90%
4) 630 MW IGCC Coal
5) 630 MW IGCC with Carbon Capture and Storage at 90%

Figure A-1 indicates that supercritical coal without sequestration is the most cost effective baseload option; however, it would be difficult to permit new coal generation in the current regulatory environment. Nuclear generation is the next most cost effective baseload technology, followed by IGCC without sequestration. Supercritical coal and IGCC with 90% carbon capture and storage are the most costly as sequestration costs are not competitive at current CO_2 allowance price projections.

Peak / Intermediate Technologies

Figure A-2 in Appendix A shows the screening curves for the peak / intermediate category. The following technologies are found on this chart:

1) 4x204 MW Simple-Cycle CT
2) 460 MW Unfired + 150 MW Duct Fired + 40 MW Inlet Evaporative Cooler Combined Cycle (650MW total)
3) 460 MW Unfired +150 MW Duct Fired (Off) + 40 MW Inlet Evaporative Cooler Combined Cycle (500 MW total)

Figure A-2 indicates that simple-cycle CT generation is the best peaking option up to a 40% capacity factor. Combined Cycles with and without Duct Firing become the best option from 40% to 100% capacity factor.[12]

Renewable Technologies

Figure A-3 in Appendix A shows the screening curves for the renewable category of screening. The following technologies are found on this chart:

1) 150 MW Wind
2) 25 MW Solar Photovoltaic
3) 100 MW Woody Biomass
4) 10.5 MW Markland Hydro Upgrade

One must remember that busbar chart comparisons involving some renewable resources, particularly wind and solar resources, can be somewhat misleading because these resources do not contribute their full installed capacity at the time of the system peak[13]. Since busbar charts attempt to levelize and compare costs on an installed kW basis, wind and solar resources appear to be more economic than they would be if the comparison was performed on a peak kW basis.

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[12] Duct firing in a CC unit is a process to introduce more fuel (heat) directly into the combustion turbine exhaust (waste heat) stream, by way of a duct burner, to increase the temperature of the exhaust gases entering the Heat Recovery Steam Generator (HRSG). This additional heat allows the production of additional steam to produce more electricity in the steam (bottoming) cycle of a CC unit. It is a low cost ($/kW installed cost) way to increase power (MW) output during times of very high electrical demands and/or system emergencies. However, it adversely impacts the efficiency (raises the heat rate) and thereby increases the operating cost of a CC unit and is used primarily as a peaking resource.

[13] For purposes of this IRP, wind resources are assumed to contribute 10% of installed capacity at the time of peak and solar resources are assumed to contribute 38% of installed capacity at the time of peak.

New hydro resources tend to be very site-specific; therefore, Duke Energy Indiana normally evaluates both pumped storage capacity and new run-of-river energy resources on a project-specific basis. An upgrade to the existing hydro units at Duke Energy Indiana's Markland Hydro facility was considered as a candidate resource in this year's IRP analyses. Figure A-3 indicates an upgrade to the existing Markland Hydro Station is the most cost effective renewable option. Wind is next most cost effective technology but is intermittent and does not contribute significantly to meeting the system peak. Biomass generation is higher cost than wind but is a dispatchable resource and can compete as a baseload generation option. However, uncertainties associated with the lack of fuel infrastructure and the risk of biomass not being considered carbon neutral limits the use until there is more regulatory certainty. Solar is the most expensive of the renewable options evaluated. It contributes more at the time of the summer peak than wind, but is limited to a 20% capacity factor on an annual basis.

3. Unit Size

The unit sizes selected for planning purposes generally are the largest technologies available today because they generally offer lower $/kW installed capital costs due to economies of scale. However, the true test of whether a resource is economic depends on the economics of an overall resource plan that contains that resource (including fuel costs, O&M costs, emission costs, *etc*.), not merely on the $/kW cost. If very large unit sizes, such as those utilized for the Nuclear and/or IGCC technology types are routinely selected as part of a least cost plan, joint ownership can and may be pursued.

4. Cost, Availability, and Performance Uncertainty

Supply-side alternative project scope and estimated costs used for planning purposes for conventional technology types such as simple-cycle CT units and CC units are relatively well known based on our own building experience, cost estimates in the TAG®, information obtained from architect and engineering (A&E) firms, and equipment vendors. The current estimated CC cost uses the information obtained from the on-going combined cycle construction projects within Duke Energy. The cost estimates include step-up transformers and a substation to connect with the transmission system. Since any additional transmission costs would be site-specific and since specific sites requiring additional transmission are unknown at this time, typical values for additional transmission costs were added to the alternatives. The unit availability and performance of conventional supply-side options is also relatively well known and the TAG®, A&E firms and/or equipment vendors are sources of estimates of these parameters.

5. Lead Time for Construction

The estimated construction lead time and the lead time used for modeling purposes for the proposed simple-cycle CT units is three years. For the CC units, the estimated lead time is four years. For coal units, the lead time is five years. For nuclear units, the lead time is approximately eight years. However, the time required to obtain regulatory approvals and environmental permits adds uncertainty to the process and can increase the total project time by 1 to 3 years.

6. RD&D Efforts and Technology Advances

New energy and technology alternatives are needed to ensure a long-term sustainable electric future. Duke Energy Indiana's research, development, and delivery (RD&D) activities enable Duke Energy Indiana to track new options including modular and potentially dispersed generation systems (small and medium nuclear reactors), CTs, and advanced fossil technologies. Emphasis is placed on providing information, assessment tools, validated technology, demonstration/deployment support, and RD&D investment opportunities for planning and implementing projects utilizing new power generation technology to assure the Company is in the forefront of electricity supply and delivery.

Of particular interest with regard to this resource plan is the expected advancement that will be made in CT/CC technology. Advances in stationary industrial CT/CC technology should result from ongoing research and development efforts to improve both commercial and military aircraft engine efficiency and power density, as well as expanding research efforts to burn more hydrogen-rich fuels. The ability to burn hydrogen-rich fuels will enable very high levels of CO_2 removal and shifting in the syngas utilized in IGCC technology, thereby enabling a major portion of the advancement necessary for a significant reduction in the carbon footprint of this coal-based technology.

7. Coordination With Other Utilities

Decisions concerning coordinating the construction and operation of new units with other utilities or entities are dependent on a number of factors including the size of the unit versus the capacity requirement of each utility and whether the timing of the need for facilities is the same. To the extent that units that are larger than needed for Duke Energy Indiana's requirements become economically viable in a plan, co-ownership can be considered at that time. Coordination with other utilities can also be achieved through purchases and sales in the bulk power market.

G. <u>BENTON COUNTY WIND ENERGY PPA</u>

Duke Energy Indiana has a 20-year power purchase agreement (PPA) with the Benton County Wind Energy Project. Duke Energy Indiana purchases the energy output from 100 MW of wind turbine capacity for a period of 20 years. This was the first commercial wind farm in the state of Indiana. The facility's in service date was April 19, 2008.

In this IRP, a capacity credit of 10% of the installed capacity was modeled (*i.e.*, 10 MW out of the installed approximately 100 MW was counted as capacity toward the reserve margin requirement).

The Company only pays for the energy it receives from Benton County Wind at a fixed price per MWh, which escalates annually. Benton County Wind receives and retains existing and future tax credits or tax benefits as the owner or operator of the wind renewable energy project. Duke Energy Indiana is entitled to ownership of all of the renewable energy certificates (RECs) and carbon credits associated with power produced by the wind turbines.

H. DUKE ENERGY INDIANA'S RENEWABLE ACTIVITIES

Go Green

The Duke Energy Indiana GoGreen Power program was approved in March 2006 and was extended in July 2009 for four years. The renewed program reduced the price from $2.50 per block to $2 per 100 kWh block, with a minimum of two blocks. There are approximately 1,400 customers on the program. Under the program, Duke Energy will obtain energy from environmentally friendly generating sources located in Indiana, as they become available. Renewable energy is also purchased from third parties in the form of renewable energy certificates.

In the July 2009 approval, a Carbon Offset program was also added to the green portfolio of programs as another option for customers to support a carbon free environment and reduce their carbon footprint. Each $4 block of carbon offset mitigates 500 pounds of carbon dioxide or equivalent. The program launched in September 2009 with Duke Energy Indiana customers. There are currently 24 customers on the Carbon Offset program.

I. MARKLAND HYDRO RELICENSING

In the fall of 2004, Duke Energy Indiana began the relicensing process for the existing three-unit Markland Hydroelectric facility (FERC Project No. 2211) located in Switzerland County, in Florence, Indiana. The original license for the facility was issued by the Federal Power Commission (now the Federal Energy Regulatory Commission or FERC) on May 31, 1961, and was effective as of May 1, 1961. At the time the original license became effective, the construction of the three units at Markland had not yet been completed. The original license was for a 50-year term which expired on April 30, 2011. Duke Energy Indiana filed for a new operating license with the FERC on April 24, 2009 and received the new license on May 1, 2011 for a 30-year term. Additional information on the Markland Hydro re-licensing process may be found in Appendix E (Short-Term Implementation Plan (STIP)) of this IRP filing.

J. EDWARDSPORT IGCC PLANT

On September 6, 2006, Duke Energy Indiana filed a petition with the IURC for a CPCN for an Integrated Coal Gasification Combined Cycle (IGCC) plant at Edwardsport (Cause No. 43114). Past resource plans showed a need for a baseload capacity addition within the next ten years, so Duke Energy Indiana began investigating the possibility of building an IGCC plant in early 2004. A CPCN for the Edwardsport IGCC was received from the IURC in late 2007 and an air permit was received in early 2008, with construction beginning shortly thereafter. Construction is currently on-going and is expected to be completed in the third quarter of 2012.

The new IGCC 600 MW class "unit" will consist of two CT units with heat recovery steam generators (HRSGs) in their exhausts, and one steam turbine generator unit that will utilize the steam from both the HRSGs and from the coal gasification process. Syngas will be derived from Illinois Basin coal and will be the primary fuel source for the IGCC. There will be two gasifier trains, with each one generating enough syngas to fully fuel one of the CT units. The plant will also utilize natural gas for plant start-up, co-firing, and as a back-up fuel for the CT units.

As currently planned, the plant will also be CO_2-capture ready in that space for the future addition of this equipment will be available and accessible should the need for this capability arise.

Table 5-A
Duke Energy Indiana
Summary of Existing Electric Generating Facilities

Plant Name	Unit Number	City or County	State	In-Service Year	Unit Type	Primary Fuel	Secondary Fuel (if any)	Ownership %	Winter Rating (MW)	Summer Rating (MW)	Environmental Controls	Notes
Cayuga	1	Cayuga	IN	1970	ST	Coal		100.00%	505.0	500.0	FGD, EP, LNB, OFA, CT	
Cayuga	2	Cayuga	IN	1972	ST	Coal		100.00%	500.0	495.0	FGD, EP, LNB, OFA, CT	
Cayuga	3A	Cayuga	IN	1972	IC	Oil		100.00%	3.0	3.0	None	
Cayuga	3B	Cayuga	IN	1972	IC	Oil		100.00%	3.0	3.0	None	
Cayuga	3C	Cayuga	IN	1972	IC	Oil		100.00%	2.0	2.0	None	
Cayuga	3D	Cayuga	IN	1972	IC	Oil		100.00%	2.0	2.0	None	
Cayuga	4	Cayuga	IN	1993	CT	Gas	Oil	100.00%	120.0	99.0	WI	
Connersville	1	Connersville	IN	1972	CT	Oil		100.00%	49.0	43.0	None	
Connersville	2	Connersville	IN	1972	CT	Oil		100.00%	49.0	43.0	None	
Gallagher	1	New Albany	IN	1959	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA	
Gallagher	2	New Albany	IN	1958	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA, DSI	DSI required by Consent Decree
Gallagher	3	New Albany	IN	1960	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA	
Gallagher	4	New Albany	IN	1961	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA, DSI	DSI required by Consent Decree
Gibson	1	Owensville	IN	1976	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	2	Owensville	IN	1975	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	3	Owensville	IN	1978	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	4	Owensville	IN	1979	ST	Coal		100.00%	627.0	622.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	5	Owensville	IN	1982	ST	Coal		50.05%	312.8	310.3	FGD, SCR, SBS, EP, LNB, OFA, CL	Commonly owned with WVPA (25%) and IMPA (24.95%)
Henry County	1	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Henry County	2	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Henry County	3	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Madison	1	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	2	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	3	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	4	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	5	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	6	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	7	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	8	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Markland	1	Florence	IN	1967	HY	Water		100.00%	17.6	17.6	None	
Markland	2	Florence	IN	1967	HY	Water		100.00%	16.1	16.1	None	
Markland	3	Florence	IN	1967	HY	Water		100.00%	18.0	18.0	None	

Plant Name	Unit Number	City or County	State	In-Service Year	Unit Type	Primary Fuel	Secondary Fuel (if any)	Ownership %	Winter Rating (MW)	Summer Rating (MW)	Environmental Controls	Notes
Miami-Wabash	1	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	2	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	3	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	5	Wabash	IN	1969	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	6	Wabash	IN	1969	CT	Oil		100.00%	17.0	16.0	None	
Noblesville	1	Noblesville	IN	1950	CC	Gas		100.00%	46.0	46.0	CT	Units 1 & 2 were repowered as Gas CC in 2003
Noblesville	2	Noblesville	IN	1950	CC	Gas		100.00%	46.0	46.0	CT	Units 1 & 2 were repowered as Gas CC in 2003
Noblesville	3	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Noblesville	4	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Noblesville	5	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Wabash River	2	West Terre Haute	IN	1953	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	3	West Terre Haute	IN	1954	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	4	West Terre Haute	IN	1955	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	5	West Terre Haute	IN	1956	ST	Coal		100.00%	95.0	95.0	EP, LNB, OFA	
Wabash River	6	West Terre Haute	IN	1968	ST	Coal		100.00%	318.0	318.0	EP, LNB, OFA	
Wabash River	7A	West Terre Haute	IN	1967	IC	Oil		100.00%	3.1	3.1	None	
Wabash River	7B	West Terre Haute	IN	1967	IC	Oil		100.00%	3.1	3.1	None	
Wabash River	7C	West Terre Haute	IN	1967	IC	Oil		100.00%	2.1	2.1	None	
Wheatland	1	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	2	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	3	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	4	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Total									7,081.9	6,830.3		

Unit Type

ST	Steam
CT	Simple Cycle Combustion Turbine
CC	Combined Cycle Combustion Turbine
IC	Internal Combustion
HY	Hydro

Fuel Type

Coal
Gas
Syngas
Oil
Diesel
Water

Environmental Controls

FGD	SO2 Scrubber
SCR	Selective Catalytic Reduction
SBS	Sodium Bisulfite / Soda Ash Injection System
LNB	Low NO_x Burner
EP	Electrostatic Precipitator
BH	Baghouse
CT	Cooling Tower
CL	Cooling Lake
WI	Water Injection (NO_x)
SI	Steam Injection (NO_x)
OFA	Overfire Air
CO	Passive Carbon Monoxide Catalyst
DSI	Dry Sorbent Injection

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6. ENVIRONMENTAL COMPLIANCE

A. INTRODUCTION

The purpose of the environmental compliance planning process is to develop an integrated resource/compliance plan that meets the future resource needs of Duke Energy Indiana while at the same time meeting environmental requirements in a reliable and economic manner. Compliance planning associated with existing laws and regulations is discussed in this chapter. Risks associated with anticipated and potential changes to environmental regulations are discussed in Section I.

B. CLEAN AIR ACT AMENDMENTS (CAAA) PHASE I COMPLIANCE

A detailed description of Duke Energy Indiana's CAAA Phase I compliance planning process can be found in the 1995, 1997, and 1999 IRPs.

C. CAAA PHASE II COMPLIANCE

A detailed description of Duke Energy Indiana's CAAA Phase II compliance planning process can be found in the 1995, 1997, and 1999 IRPs.

D. NO_x STATE IMPLEMENTATION PLAN (SIP) CALL COMPLIANCE

A detailed description of Duke Energy Indiana's Nitrogen Oxide (NO_x) State Implementation Plan (SIP) Call compliance planning process can be found in the 1999, 2001, and 2003 IRPs.

E. CLEAN AIR INTERSTATE RULE (CAIR) AND CLEAN AIR MERCURY RULE (CAMR) - DUKE ENERGY INDIANA PHASE 1

A detailed description of Duke Energy Indiana's CAIR and CAMR Phase 1 compliance planning process and results can be found in the 2005, and 2007, and 2009 IRPs.

F. ENVIRONMENTAL RISK/REGULATORY IMPACTS

There are a number of environmental risks/regulatory changes that can affect Duke Energy Indiana in the future. As a result, Duke Energy closely monitors these changes and develops responses to the changes. The most significant risks are discussed in more detail below.

Ozone National Ambient Air Quality Standards (NAAQS)

In 1997, the United States Environmental Protection Agency (US EPA or EPA) announced a new and tighter 8-hour ozone standard of 84 parts per billion to protect human health. The standard established new limits for the permissible levels of ground level ozone in the atmosphere. However, the effect of the standard and its implementation were delayed for years in court proceedings, as the standard was challenged, but ultimately upheld. Still, the Circuit Court for the District of Columbia invalidated the EPA's implementation procedure for dealing with the 8-hour ozone standard. The EPA has yet to finalize all the implementation rules for the 8-hour ozone standard in accordance with the Court's opinion.

In 2003, Indiana and other states submitted to EPA their list of potential non-attainment counties for ozone. In 2004, EPA finalized state non-attainment area designations. As a result of various federal and state regulatory actions, significant reductions in ozone precursor emissions from a wide variety of sources have been made over the years. Currently, all counties in the state are monitoring air quality levels below the 84 parts per billion (ppb) ozone standard. The State of Indiana has been working with EPA over the past few years to re-designate all Indiana counties as attaining the 84 ppb 8-hour standard based on three years of acceptable ozone monitoring results. The few remaining requests for re-designation to attainment are expected to be approved in the near future.

In March 2008 EPA revised the 8-hour ozone standard by lowering it from 84 to 75 parts per billion. In September of 2009, EPA announced a decision to reconsider the 75 ppb standard.

The decision was in response to a court challenge from environmental groups and EPA's belief that a lower standard was justified.

On January 7, 2010, in response to its reconsideration, EPA proposed lowering the 75 ppb primary ozone standard to between 60 and 70 ppb. EPA also proposed on August 1, 2011, a secondary ozone standard intended to protect sensitive vegetation and ecosystems. After several delays, the Administration announced on September 2, 2011, that EPA would not finalize its reconsideration of the 75 ppb primary standard or the secondary standard ahead of the Agency's normal 5-year review of the standard. This decision means the 75 ppb standard will remain in place unless or until it is revised under the next 5-year review which is expected to be completed in 2014. While EPA has yet to announce its plans for moving forward, the Agency is expected to begin the process of implementing the 75 ppb standard. The first step in the implementation process will be for EPA to make final area designations. While the exact timeline for implementing the 75 ppb standard is unclear at this time, final area designations could be made by mid-2012 with state SIPs due by mid-2015. Initial attainment would then be required for most areas in 2018, with controls possibly required prior to the start of the 2017 ozone season. Until the state of Indiana develops implementation plans, only an estimate can be developed of the potential impact to Duke Energy Indiana's regulated generation. Duke Energy Indiana will continue to monitor these developments and their potential impact on the Company.

Particulate Matter NAAQS ($PM_{2.5}$)

In 1997, EPA announced new annual and daily particulate matter (PM) standards intended to protect human health. The standards establish limits for very small particulate, those considered respirable, less than 2.5 microns in diameter. The control of these very small particles could require significant reductions in gaseous sulfur dioxide and nitrogen oxides emissions. As with the ozone standard discussed above, EPA's new PM standard and subsequent implementation was delayed for years because of legal challenges.

On September 21, 2006, the EPA announced its decision to revise the $PM_{2.5}$ NAAQS standard. The daily standard was reduced from 65 ug/m3 to 35 ug/m^3. The annual standard remained at 15 ug/m^3. Originally 18 counties, or parts of counties, in Indiana violated the new 35 µg/m^3 24-hour standard when it was finalized. However, at this time all counties in the state have monitoring data that is below the 24-hour $PM_{2.5}$ air quality standard.

On February 24, 2009, the D.C Circuit unanimously remanded to EPA the Agency's decision to retain the annual 15 ug/m^3 primary $PM_{2.5}$ NAAQS and to equate the secondary $PM_{2.5}$ NAAQS with the primary NAAQS. EPA must now undertake new rulemaking to revise the standards consistent with the court's decision. EPA's current timeline indicates that it will propose a $PM_{2.5}$ rule late 2011 or early 2012 and finalize a rule in late 2012 or early 2013. The likely outcome of EPA's ongoing review will be a tightening of the primary daily and annual $PM_{2.5}$ NAAQS along with the creation of a separate secondary $PM_{2.5}$ NAAQS. The current annual and daily $PM_{2.5}$ standards alone are not driving any emission reductions at Duke Energy Indiana facilities. The reduction in SO_2 and NO_X emissions to address the current annual standard are being addressed through CAIR. Reductions to address the current daily standard will be addressed as part of the Cross-State Air Pollution Rule (CSAPR) that EPA developed to replace CAIR (the CSAPR will continue to address reductions needed for the current annual standard).

SO_2 NAAQS

In November 2009, EPA proposed a rule to replace the 24-hour and annual primary SO_2 NAAQS with a 1-hour SO_2 standard. EPA finalized its new 1-hr standard of 75 ppb in June 2010. EPA will have 2 years (until June 2012) to designate areas relative to their attainment status with the new standard. States with non-attainment areas will have until January 2014 to submit their SIPs. Initial attainment with the new standard is expected by August of 2017. Required controls may need to be in place by late-2016. EPA will base its nonattainment designations on monitored air quality data as well as on dispersion modeling. In September 2011, Duke Energy met with the Indiana Department of Environmental Management (IDEM) to review IDEM's initial SO_2 ambient air quality modeling. Duke Energy has conducted its own facility SO_2 modeling, as well. At this time, the potential impact of the SO_2 NAAQS on Duke Energy Indiana facilities is not known. Further discussions with IDEM are planned. Other planned modifications to address compliance with the Utility MACT and the Cross-

State Air Pollution Rule will likely also help address SO_2 NAAQS challenges for Duke Energy Indiana.

In addition, EPA is proposing to require states to relocate some existing monitors and to add some new monitors. While these monitors will not be used by EPA to make the initial nonattainment designations, they will play a role in identifying possible future nonattainment areas.

Cross-State Air Pollution Rule – Replacement for Clean Air Interstate Rule (CAIR)

The EPA finalized its CAIR in May 2005. The CAIR limits total annual and summertime NO_X emissions and annual SO_2 emissions from electric generating facilities across the Eastern U.S. through a two-phased cap-and-trade program. Phase 1 began in 2009 for NO_X and in 2010 for SO_2. In July 2008, the U.S. Court of Appeals for the District of Columbia (D.C. Circuit) issued its decision in *North Carolina v. EPA* vacating the CAIR. In December 2008, the D.C. Circuit issued a decision remanding the CAIR to the EPA, allowing CAIR to remain in effect until EPA developed new regulations.

EPA published in August 2010 its proposed Transport Rule to replace the CAIR. On August 8, 2011, EPA published the final rule, now known as the Cross-State Air Pollution Rule (CSAPR). The CSAPR replaces the CAIR and establishes state-level annual SO_2 and NO_X caps that take effect on January 1, 2012, and state-level ozone-season NO_X caps that take effect on May 1, 2012. The cap levels decline, particularly for SO_2, in 2014 in Indiana. The CSAPR allows limited interstate and unlimited intrastate allowance trading. The final rule is significantly different from the original proposed Transport Rule. As a result, Duke Energy Indiana has not had adequate time to prepare for these changes. Immediate steps are planned to develop strategies to minimize impacts while complying with the CSAPR. Duke Energy Indiana will likely be moderately challenged to comply with annual SO_2 allocations in 2012 and 2013 but significantly challenged beginning in 2014.[14] On October 14, 2011, the EPA published in the Federal Register, a proposed rule to revise the CSAPR. The proposed rule would revise unit-level allocations in Indiana to better account for utility consent decrees. As

[14] The capacity factors on uncontrolled units may have to be regulated to comply in the near term.

a result, the rule proposes a minor increase in the number of Duke Energy Indiana NO_X allocations, and a minor decrease in the number of Duke Energy Indiana SO_2 allocations beyond those allocated by the final CSAPR rule published in August. More importantly, this proposed rule also amends the assurance penalty provisions to start in 2014, instead of 2012. This proposed change will purportedly promote the development of allowance market liquidity, thereby smoothing the transition from the CAIR programs to the CSAPR programs in 2012.

Additional revisions to the CSAPR could be developed by EPA that would incorporate the more stringent ozone and particulate matter NAAQS, which, as discussed, are in varying stages of development by the EPA.

Figures 6-A, 6-B, and 6-C below identify the base emission allocations to the Duke Energy Indiana generating units, as provided in the final August 2011 CSAPR.

Clean Air Mercury Rule (CAMR) and Replacement Utility Boiler MACT

The IDEM adopted the EPA version of the CAMR in October 2007. Numerous states, environmental organizations, industry groups and individual companies challenged various portions of the CAMR, including the determination that it is not appropriate or necessary to regulate mercury emissions under Section 112 of the Clean Air Act and the utilization of a cap-and-trade mechanism for mercury reductions. The Appeals Court of the D.C. Circuit vacated the entire rule in February 2008 due to numerous significant flaws. This action had the effect of eliminating all of the associated regulations requiring control and monitoring of mercury emissions until EPA could complete further rulemaking.

The replacement rule, the Utility Boiler MACT (Maximum Achievable Control Technology) Rule, creates emission limits for hazardous air pollutants (HAPs), including mercury, acid gases, and other metals from coal-fired and oil-fired power plants. The MACT rule requires existing units to achieve emissions reductions based on the performance of the top 12 percent of similar sources, and new units must meet reductions as good as or better than the best controlled similar source.

Duke Energy completed work in 2010 as required for EPA's Utility MACT Information Collection Request (ICR). The ICR required collection of mercury and HAPs emissions data from numerous Duke Energy Indiana facilities for use by EPA in developing the MACT rule. EPA published a proposed MACT rule (now referred to by EPA as the Toxics Rule) on May 3, 2011, and expects to finalize it in November 2011. As proposed, the Toxics Rule is expected to require compliance with new emission limits in early 2015, with possible one-year extensions that a permitting authority can grant on a case-by-case basis. While the implications of the MACT rule are not fully known at this time, Duke Energy Indiana is likely to face significant challenges which could include retirement of certain assets, installing major HAPs controls, as well as other compliance strategies.

Clean Water Act Section 316(a) and 316(b)

Protection of single fish species and aquatic communities is a primary focus of water permitting for coal, oil, gas, and nuclear power plants and industrial facilities under the Clean Water Act Section 316(a) - heated cooling water discharges, and 316(b) – entrainment through cooling water intake systems and impingement on intake screens. The financial implications of any new 316(a) and 316(b) regulations to electric generation capacity and plant operations are potentially large. Electric utilities generally have a far greater number of cooling water intake structures and higher flows than other industries.

All of Duke Energy Indiana's existing stations that have once-through cooling are potentially affected by Section 316(a) regulation of a station's heated cooling-water discharge. This regulation could require closed circuit cooling (*e.g.*, cooling towers) at all of Duke Energy Indiana's open-cycle stations on the Wabash, White, and Ohio rivers to protect fish communities.

Federal regulations in Section 316(b) of the Clean Water Act may necessitate cooling water intake modifications and/or cooling towers for existing facilities to minimize impingement and entrainment of aquatic organisms. All of Duke Energy Indiana's coal-fired generating stations are potentially affected sources under that rule. EPA issued a proposed 316(b) rule on April 20, 2011, and expects to finalize the rule in July 2012. Depending upon a station's National Pollutant Discharge Elimination System (NPDES) permit renewal schedule, compliance with the rule could begin as early as mid-2015.

EPA's proposed rule lists four options with a preference for one option. The preferred option impacts all existing facilities with a design intake flow greater than 2 million gallons per day (mgd) or more from rivers, streams, lakes, reservoirs, estuaries, oceans, or other U.S. waters that utilize at least 25% of the water withdrawn for cooling purposes. The proposed rule imposes mortality reduction standards due to both fish impingement and entrainment. In order to meet fish impingement standards, intake screen modifications are a possibility for nearly all plant intakes. EPA has not mandated the use of cooling towers as "Best Technology Available" to address entrainment requirements. However, site specific studies are proposed by the rule in order to address best technology options for complying with the entrainment requirements. These studies could begin as early as 2013. At this time, Duke Energy Indiana cannot estimate the overall cost impact of the proposed rule on its generating facilities.

Steam Electric Effluent Guidelines

In September 2009, EPA announced plans to revise the steam electric effluent guidelines. In order to assist with development of the revised regulation, EPA issued an ICR to gather information and data from nearly all steam-electric generating facilities. The ICR was completed and submitted to EPA in October 2010. The regulation is to be technology-based, in that limits are based on the capability of technology. The primary focus of the revised regulation is on coal-fired generation, thus the major areas likely to be impacted are Flue Gas Desulfurization (FGD) wastewater treatment systems and ash handling systems. The EPA may set limits that dictate certain FGD wastewater treatment technologies for the industry and may require dry ash handling systems be installed. Following review of the ICR data, EPA plans to issue a draft rule in July 2012 and a final rule in January 2014. After the final rulemaking, effluent guideline requirements will be included in a station's NPDES permit renewals. Thus, requirements to comply with NPDES permit conditions may begin as early as 2017 for some facilities. The length of time allowed to comply will be determined through the permit renewal process. Duke Energy Indiana cannot predict the impact of this regulation at this time on facility operations.

Bevill Determination and Coal Combustion Byproducts

In April 2000, EPA issued a regulatory determination for fossil fuel combustion wastes (65 FR 32214, May 22, 2000). The purpose of the determination was to decide whether certain wastes from the combustion of fossil fuels should remain exempt from subtitle C (management as hazardous waste) under the Resource Conservation and Recovery Act (RCRA). The Agency's decision was to retain the exemption from hazardous waste management for all of the fossil fuel combustion wastes. However, the Agency also determined and announced that waste management regulations under RCRA subtitle D (management as non-hazardous wastes) are appropriate for certain coal combustion wastes that are disposed in landfills and surface impoundments.

Following Tennessee Valley Authority's Kingston ash dike failure in December 2008, EPA began an effort to assess the integrity of ash dikes nationwide and to begin developing a rule to manage CCRs. CCRs include fly ash, bottom ash and FGD byproducts (gypsum). Since the 2008 dike failure, numerous ash dike inspections have been completed by EPA and an enormous amount of input has been received by EPA as it developed proposed regulations.

In June 2010, EPA issued its proposed rule regarding CCRs. The proposed rule offers two options: 1) a hazardous waste classification under Resource Conservation and Recovery Act (RCRA) Subtitle C and 2) a non-hazardous waste classification under RCRA Subtitle D, along with dam safety and alternative rules. Both options would include strict new requirements regarding the handling, disposal and potential re-use ability of CCRs. The proposal could result in more conversions to dry handling of ash, more landfills, closures of existing ash ponds and the addition of new wastewater treatment systems. Final regulations are not expected until 2012 or 2013. EPA's regulatory classification of CCRs as hazardous or non-hazardous will be critical in developing plans for handling CCRs in the future. The impact to Duke Energy Indiana of this regulation as proposed is still being assessed. The schedule for compliance will depend upon when EPA finalizes a rule and the rule requirements.

Climate Change

Although there is still much to learn about the causes and long-term effects of climate change, many, including Duke Energy Indiana, advocate taking steps now to begin reducing GHG emissions with the long-term aim of stabilizing the atmospheric concentration of GHGs.

On June 26, 2009, the U.S. House of Representatives passed H.R. 2454 - the American Clean Energy and Security Act of 2009 (ACES). This legislation included a GHG cap-and-trade program covering approximately 85% of the GHG emissions in the U.S. economy, including emissions from the electric utility sector. On November 5, 2009, the U.S. Senate Environment and Public Works Committee passed and sent to the Senate floor S. 1733 – the Clean Energy Jobs and American Power Act of 2009. The Senate's legislation included an economy-wide cap-and-trade program similar to the one contained in ACES. However, the 111th Congress adjourned on January 3, 2011, without passage of H.R 2454 or any other legislation mandating the control or reduction of GHG emissions. This means that any potential effort by the 112th Congress to pass legislation mandating GHG emission reductions would have to start anew because legislation that is not passed in a previous Congress does not carry over to the next. Duke Energy believes that it is highly unlikely that legislation mandating reductions in GHG emissions will be passed by the 112th Congress which ends at the end of 2012. Beyond 2012 the prospects for enactment of any legislation mandating reductions in GHG emissions is highly uncertain. While Duke Energy continues to believe that Congress will eventually adopt some form of mandatory GHG emission reduction legislation, management cannot predict if or when such legislation might be enacted, what the requirements of any potential legislation might be, or the potential impact it might have on Duke Energy Indiana.

On December 7, 2009, the EPA finalized an Endangerment Finding for greenhouse gases under the CAA. The Endangerment Finding did not impose any regulatory requirements on the electric utility industry, but it was a necessary prerequisite for the EPA to be able to finalize several subsequent GHG rules. A subsequent EPA regulation of GHGs from mobile sources issued in 2010 resulted in GHGs being pollutants subject to regulation under the

CAA, thereby subjecting newly constructed and modified stationary sources to CAA's Prevention of Significant Deterioration (PSD) permitting program for increases in GHGs. Without any changes, the CAA requirements would have subjected tens of thousands of additional stationary sources to PSD permitting requirements. To avoid this result, the EPA issued the Tailoring Rule on June 3, 2010. Under the Tailoring Rule, which went into effect on January 2, 2011, new major stationary sources of GHGs and existing major stationary sources of GHGs that undertake a modification that will result in a net GHG emissions increase of at least 75,000 tons per year are subject to GHG permitting requirements under the PSD permitting program. All of Duke Energy Indiana's existing coal-fired generating units and several of its natural gas-fired generating units are major sources of GHG emissions. The PSD permitting program requires sources that trigger PSD permitting requirements for GHGs to perform a Best Available Control Technology (BACT) analysis for GHG emissions to determine what, if any, actions must be taken at the source to limit its GHG emissions. Greenhouse gas PSD permitting requirements and the application of BACT to limit GHG emissions do not apply to any existing source that does not undertake a modification resulting in a net GHG emissions increase of at least 75,000 tons per year.

Numerous entities have filed petitions with the D.C. Circuit Court of Appeals for review of EPA's Endangerment Finding and Tailoring Rule. Duke Energy Indiana cannot predict the outcome of the litigation and it could be several years before the legal challenges are ultimately resolved.

In early 2011, the EPA entered into a settlement agreement requiring it to propose by July 26, 2011, and finalize by May 26, 2012 a rule to establish GHG emission standards (New Source Performance Standards) for new fossil-fueled electric generating units and existing fossil-fueled electric generating units that undertake a major modification. EPA missed the proposed rule date, and will propose a new schedule for the rulemaking. The EPA previously announced plans to issue emission guidelines for states for their use in developing plans for reducing GHG emissions at existing fossil-fueled electric generating units that do not undertake a major modification. Initial NSPS regulations are likely to focus on energy efficiency improvements due to the lack of a demonstrated technology to reduce CO_2

emissions. The outcome of these pending EPA regulatory actions is uncertain and Duke Energy Indiana cannot determine at this time if they will have a material impact on future results of operations.

Duke Energy Indiana does not anticipate mandated reductions in GHG emissions from its existing facilities.

G. ENVIRONMENTAL COMPLIANCE PLAN

The Duke Energy Indiana CAIR/CAMR Phase 1 Compliance Plan resulted in the recommendation and approval of the following emission control equipment components: (1) the installation FGDs or scrubbers on five of Duke Energy Indiana's large coal-fired units (Gibson Units 1, 2, and 3, and Cayuga Units 1 and 2); (2) upgrades to the existing scrubbers on Gibson Units 4 and 5; and (3) the installation of baghouse technology at Gallagher Units 1 through 4. In addition, pursuant to the Consent Decree entered into by Duke Energy Indiana and approved by the US District Court for the Southern District of Indiana, on March 18, 2010 to resolve litigation against the Gallagher Station Units 1 and 3, dry sorbent injection systems (DSI) have also been installed on Gallagher Units 2 and 4. In conjunction with low sulfur coal, the DSI systems will result in an SO_2 emission rate for these two units of not greater than 0.8#/mmBTU. The construction of all of these components has been completed and they have entered commercial operation.

With the Duke Energy Indiana CAIR/CAMR Phase 1 compliance plan implementation complete, an analysis was undertaken to determine the potential impact of the proposed Clean Air Transport Rule (CATR) and final CSAPR, as well as the proposed MACT rule. CSAPR compliance was modeled by use of market emission allowance prices (from Duke Energy's fundamental forecast) as well as reviewing modeled emission levels and comparing those to the CSAPR allocations. The MACT rule, however, is much more complex to model. Duke Energy Indiana used all available information in consideration of the current and expected performance of its generating units compared to the proposed MACT standards. In many cases, such as with condensable particulate matter and the non-mercury metals, such performance information is sparse. In addition, the ability of add-on environmental controls to reduce these emission levels is not fully understood. Given such uncertainty, in addition to the short timeframe proposed by EPA for compliance implementation, any compliance plan developed will be subject to change as the process evolves and more is learned.

The impact of other pending regulations was also incorporated to the extent that information was available to reasonably determine the potential impact. The requirements assumed included

- Coal Combustion Residuals Rule and Effluent Guidelines
  - Dry ash management conversion costs
  - Waste water treatment upgrade costs
  - Landfill construction costs
- 316(b) Intake Structure Rule
  - Aquatic impingement and entrainment studies
  - Intake structure and traveling screen upgrade costs
- National Ambient Air Quality Standards (NAAQS) for Ozone and SO_2
  - Increased risk for additional NO_x and SO_2 reductions beyond the CSAPR
  - Increased risk for site-specific control requirements

The balance of all of the assumptions for the compliance analysis were reviewed and updated where necessary to coincide with the other assumptions used for the development of this IRP.

1. Compliance Planning Process

For this analysis, Duke Energy Indiana generally utilized the same three-stage analytical modeling process as in other past compliance planning activities, involving an external vendor's (for 2011, Wood Mackenzie) national modeling tools and Duke Energy Indiana's internal Engineering Screening Model. This most recent Phase 2 analysis concentrated on the potential need for further compliance measures under the proposed MACT rule, as well as other potential economic SO_2 and NO_x emission reductions given the CSAPR allocations. A specific focus was placed on retirement assessments of the uncontrolled coal units due to the magnitude of the environmental control investments potentially required on those units.

Wood Mackenzie used their national modeling tools to model the current CAIR, as well as its transition to the proposed CATR and an assumed CAMR replacement rule. As in the past, from these modeling runs Duke Energy Indiana was provided forecasted emission allowance prices (for SO_2, Seasonal NO_x, Annual NO_x, and CO_2), power prices, and fuel prices (coal, oil, natural gas).

2. Engineering Screening Model Results

The Engineering Screening Model was used to screen down to the most economic emission reduction options. Technology options that were screened included wet and dry FGDs and DSI for SO_2 reduction; Selective Catalytic Reduction (SCR) and Selective Non-catalytic Reduction (SNCR) for NO_x reduction; and ACI with baghouses for Hg control, in addition to FGD and FGD/SCR Hg reduction co-benefits. Also modeled were fuel switch options to lower sulfur coals with appropriate particulate control upgrades as needed.

New Technologies

Investigating new emission control technologies was discussed in the 2005, 2007, and 2009 IRPs. Duke Energy continues to investigate alternative emission control options that may be less capital intensive than traditional options such as FGDs, SCRs, and baghouses. Recently, the most promising options include low cost chemical additives that may enhance the ability of existing FGDs to remove some of the hazardous air pollutants proposed to be regulated under the MACT rule. That includes mercury "re-emission" chemicals that enhance a wet scrubber's ability to remove oxidized mercury, in addition to other chemicals (calcium bromide) that promote the oxidation of mercury in the fluegas in the absence of an SCR catalyst. Investigation of these technologies continues and their ultimate applicability to the Duke Energy Indiana system is to be determined. However, for the purposes of this IRP analysis, it was assumed that the combination of these chemicals would be sufficient to allow MACT compliance for mercury on a unit with an FGD without also having to have a baghouse or SCR installed.

Capital Cost Estimates

Since the 2009 IRP, and with ongoing review of proposed and final regulations, Duke Energy has undertaken some engineering studies to get updated detailed capital cost estimates for new emission control options on some units. That includes cost estimates for SCRs and baghouses at Cayuga Station; baghouses at Units 3, 4, and 5 at Gibson Station; and a complete scrubber replacement for Gibson Unit 5. High level cost estimates have also been developed for other compliance requirements, such as dry ash management conversion and the other projects noted above. For units and project options that have not had updated detailed studies performed, costs have been estimated using best engineering judgment of equipment and installation requirements compared to the studies that were performed. This includes reviewing trends in the cost of construction (material and labor escalation, *etc.* since the time of the last estimate), and construction retrofit difficulty.

Proposed MACT Rule Compliance Requirements

Based on the modeling results, additional HAPs reductions would be required at all affected Duke Energy Indiana facilities to achieve compliance with the proposed MACT rule. Depending on which of the HAPs is at issue on each unit, the equipment options modeled to achieve compliance at these sites include the addition of baghouses with activated carbon injection at all units; SCRs in addition to the existing FGDs at Cayuga; the addition of SCR with FGD at Wabash River; the addition of activated carbon injection at Gallagher Units 2 and 4; and the addition of mercury re-emission and oxidation chemicals in conjunction with an FGD on Gibson 5. SCRs at Cayuga, and SCRs and FGDs at Wabash River, may also be required, regardless of their market-based economics or MACT rule compliance needs if nearby counties are in non-attainment status for fine particulates or ozone. Lastly, in consideration of the stringency of the MACT rule, CSAPR, and the 1-hour SO_2 NAAQS, Duke Energy Indiana has also identified the likely need to completely replace the Gibson Unit 5 scrubber. Despite the benefits of the FGD upgrade project that was performed during the Phase 1 compliance plan, the new regulations are so stringent that the existing scrubber technology, which was placed in service originally with the unit in 1982, simply cannot reliably and consistently achieve the required level of performance.

Technology Options

Considering the projects that were already included in Duke Energy Indiana's Phase 1 plan, as well as the command-and-control nature of the MACT rule and other proposed regulations where there are few, if any, markets for the emission reductions (such as emission allowances), there are few self-economic compliance technology options left available for the Duke Energy Indiana units. The driver for most of the selected compliance alternatives was compliance with the MACT rule. An overview of the new air pollution control technologies included in the IRP is shown in Tables 6-A and 6-B below.

Table 6-A

Air Pollution Control Technologies included in the Resource Plan	
Cayuga Units 1-2	SCR
	Mercury re-emission and oxidation chemicals addition
	Dibasic acid addition
Gibson Units 1-2	Mercury re-emission chemical addition
	Dibasic acid addition
Gibson Unit 3	Baghouses with activated carbon injection
	Dibasic acid addition
Gibson Unit 4	Baghouses with activated carbon injection
Gibson Unit 5	Baghouses with activated carbon injection
	Low sulfur coal with DSI
	FGD replacement
Gallagher Units 2 & 4	Activated carbon injection in the existing baghouses, with SNCR

Table 6-B

Air Pollution Technologies Included in the Wabash River Retirement Analysis	
Wabash River Units 2-5	Low sulfur coal, baghouses with activated carbon injection, DSI, and SNCR
	Retirement in 2015
Wabash River Unit 6	Low sulfur coal, baghouse with activated carbon injection, DSI, and SNCR
	Low sulfur coal, dry FGD with baghouse, activated carbon injection, and SCR
	Retirement in 2015

In addition to these specific air emission control project options, as needed and where appropriate, cost assumptions were also included for pending waste and water regulations compliance requirements so as to address all of these regulations simultaneously.

The possibility of unit retirement is indicated in the Engineering Screening Model when the annual market-based free cash flow for a unit becomes near zero or negative. In addition, some of these potential investments are relatively large, such as the potential to install both a baghouse and an FGD replacement on Gibson Unit 5, and thus deserve extra scrutiny. However, the Engineering Screening Model does not consider capacity replacement and reserve margin requirements; therefore retirement might not be an economic option once it is evaluated in the Planning and Risk Model.

3. Planning and Risk Results

The Phase 2 alternatives associated with Wabash River passed to Planning and Risk from the Engineering Screening Model were analyzed in the integration step of this IRP in conjunction with the energy efficiency and supply-side alternatives. This is discussed in detail in Chapter 8.

While the general results from these Phase 2 analyses are likely indicative of the direction needed to comply with CSAPR, the proposed MACT rule, and the other pending regulations, it should be noted that most of these requirements are not yet finalized. As a result, Duke Energy Indiana's analyses and planning to meet these rule requirements, as well as any additional environmental requirements, will generally be an ongoing effort until such time as compliance with future requirements is achieved.

H. EMISSION ALLOWANCE MANAGEMENT

Figure 6-A shows the base number of SO_2 allowances allotted by the US EPA for affected units on the Duke Energy Indiana system for the Title IV Acid Rain program, and for the CSAPR 2012-2013 and 2014 and forward control periods. Figures 6-B and 6-C show the base number of Seasonal and Annual NO_x allowances, respectively, allotted by the US EPA for affected units on the Duke Energy Indiana system for CAIR in 2011, and for the CSAPR 2012-2013 and 2014 and forward control periods.

The emission allowance markets impact the compliance strategies. The projected allowance market price is the basis against which the costs of compliance options are compared to determine whether the options are economic (*i.e.*, a "market-based" compliance planning process).

Duke Energy has maintained an interdepartmental group to perform SO_2 and NO_x emission allowance management. Duke Energy manages emissions risk by utilizing a mixture of purchasing allowances, installing equipment and, when applicable, purchasing power. The most economic decision is dependent upon the current and forecasted market price of allowances, the cost and lead-time to install control equipment, and the current and forecasted market price of power. These factors will be reviewed as the markets change and the most economic emission compliance strategy will be employed.

Figure 6-A

SO_2 ALLOWANCES ALLOCATED TO DUKE ENERGY INDIANA UNITS

(Tons)

			BASE ALLOWANCES ALLOCATED		
Plant Name	Unit/ Boiler No.	Percent Ownership	Title IV, 2010 & after	CSAPR*, 2012 & 2013	CSAPR*, 2014 & after
Cayuga	1	100.00	14,415	7,064	3,907
Cayuga	2	100.00	14,740	6,966	3,853
Cayuga	4	100.00	0	1	1
Edwardsport	6-1	100.00	0	1	1
Edwardsport	7-1	100.00	348	240	133
Edwardsport	7-2	100.00	355	205	113
Edwardsport	8-1	100.00	375	248	137
Gallagher	1	100.00	2,914	1,452	803
Gallagher	2	100.00	3,144	1,639	907
Gallagher	3	100.00	2,821	1,535	849
Gallagher	4	100.00	2,938	1,569	868
Gibson	1	100.00	17,449	9,850	5,448
Gibson	2	100.00	17,713	9,728	5,381
Gibson	3	100.00	17,743	10,521	5,819
Gibson	4	100.00	17,419	9,178	5,372
Gibson	5	50.05	9,117	4,177	2,310
Noblesville Repowering**	1-5	100.00	160	0	0
Wabash River	1	100.00	1,726	1,112	1,112
Wabash River	2	100.00	1,394	1,299	719
Wabash River	3	100.00	1,619	1,257	695
Wabash River	4	100.00	1,534	1,452	803
Wabash River	5	100.00	1,584	1,332	737
Wabash River	6	100.00	5,304	4,942	2,733
Total Duke Energy Indiana owned units			134,812	75,768	42,701

Note: Number of allowances shown are Duke Energy Indiana's portion for Gibson 5.

*CSAPR - Cross State Air Pollution Rule

**Title IV allocations for Noblesville Repowering include holdover allocations from retired boilers 1-3

Note: Allocations may change based on the proposed revision of the CSAPR in October 2011.

Figure 6-B

SEASONAL NO_x ALLOWANCES ALLOCATED TO DUKE ENERGY INDIANA UNITS

(Tons)

Plant Name	Unit/ Boiler No.	Percent Ownership	BASE ALLOWANCES ALLOCATED CAIR*, 2011	CSAPR**, 2012 & 2013	CSAPR**, 2014 & after
Cayuga	1	100.00	1,061	1,136	1,119
Cayuga	2	100.00	1,043	1,080	1,063
Cayuga	4	100.00	11	5	5
Connersville	1	100.00	2	0	0
Connersville	2	100.00	2	0	0
Edwardsport	6-1	100.00	6	1	1
Edwardsport	7-1	100.00	99	32	32
Edwardsport	7-2	100.00	90	27	26
Edwardsport	8-1	100.00	89	35	35
Gallagher	1	100.00	255	243	239
Gallagher	2	100.00	264	270	266
Gallagher	3	100.00	293	246	242
Gallagher	4	100.00	275	268	264
Gibson	1	100.00	1,387	1,600	1,576
Gibson	2	100.00	1,283	1,532	1,509
Gibson	3	100.00	1,368	1,632	1,608
Gibson	4	100.00	1,424	1,526	1,503
Gibson	5	50.05	658	656	646
Henry County	1	100.00	11	10	10
Henry County	2	100.00	11	10	10
Henry County	3	100.00	11	11	11
Madison	1	100.00	9	8	8
Madison	2	100.00	8	9	9
Madison	3	100.00	9	8	8
Madison	4	100.00	8	8	8
Madison	5	100.00	8	6	6
Madison	6	100.00	8	6	6
Madison	7	100.00	8	6	6
Madison	8	100.00	7	7	7
Noblesville Repowering***	1-5	100.00	274	128	128
Wabash River	2	100.00	171	189	186
Wabash River	3	100.00	179	186	184
Wabash River	4	100.00	195	227	224
Wabash River	5	100.00	204	199	196
Wabash River	6	100.00	670	821	808
Wheatland	1	100.00	11	9	9
Wheatland	2	100.00	12	7	7
Wheatland	3	100.00	12	7	7
Wheatland	4	100.00	13	7	7
Total Duke Energy Indiana owned units			11,449	12,158	11,979

Notes

Number of allowances shown are Duke Energy Indiana's portion for Gibson 5.

*CAIR - Clean Air Interstate Rule

**CSAPR - Cross State Air Pollution Rule

***CAIR allocations for Noblesville Repowering include holdover allocations from retired boilers 1-3.

Note: Allocations may change based on the proposed revision of the CSAPR in October 2011.

Figure 6-C

ANNUAL NO_x ALLOWANCES ALLOCATED TO DUKE ENERGY INDIANA UNITS

(Tons)

Plant Name	Unit/ Boiler No.	Percent Ownership	BASE ALLOWANCES ALLOCATED CAIR*, 2011	CSAPR**, 2012 & 2013	CSAPR**, 2014 & after
Cayuga	1	100.00	2,621	2,616	2,584
Cayuga	2	100.00	2,517	2,579	2,548
Cayuga	4	100.00	17	8	8
Connersville	1	100.00	4	0	0
Connersville	2	100.00	4	0	0
Edwardsport	6-1	100.00	7	1	1
Edwardsport	7-1	100.00	202	89	88
Edwardsport	7-2	100.00	191	76	75
Edwardsport	8-1	100.00	165	92	91
Gallagher	1	100.00	596	538	531
Gallagher	2	100.00	615	607	600
Gallagher	3	100.00	670	568	562
Gallagher	4	100.00	630	581	574
Gibson	1	100.00	3,293	3,647	3,603
Gibson	2	100.00	3,068	3,602	3,559
Gibson	3	100.00	3,283	3,895	3,849
Gibson	4	100.00	3,500	3,596	3,553
Gibson	5	50.05	1,682	1,547	1,528
Henry County	1	100.00	15	16	16
Henry County	2	100.00	16	16	16
Henry County	3	100.00	15	17	17
Madison	1	100.00	12	12	12
Madison	2	100.00	11	14	14
Madison	3	100.00	12	13	13
Madison	4	100.00	22	13	13
Madison	5	100.00	11	10	10
Madison	6	100.00	11	10	10
Madison	7	100.00	11	11	11
Madison	8	100.00	11	10	10
Noblesville Repowering***	1-5	100.00	511	236	233
Wabash River	2	100.00	422	481	475
Wabash River	3	100.00	427	465	460
Wabash River	4	100.00	476	538	531
Wabash River	5	100.00	496	493	487
Wabash River	6	100.00	1,597	1,830	1,808
Wheatland	1	100.00	13	12	12
Wheatland	2	100.00	15	11	11
Wheatland	3	100.00	14	9	9
Wheatland	4	100.00	15	10	10
Total Duke Energy Indiana owned units			27,198	28,269	27,932

Notes

Number of allowances shown are Duke Energy Indiana's portion for Gibson 5.

*CAIR - Clean Air Interstate Rule

**CSAPR - Cross State Air Pollution Rule

***CAIR allocations for Noblesville Repowering include holdover allocations from retired boilers 1-3.

Note: Allocations may change based on the proposed revision of the CSAPR in October 2011.

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7. ELECTRIC TRANSMISSION FORECAST

All transmission and distribution information is located in Appendix G.

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8. SELECTION AND IMPLEMENTATION OF THE PLAN

A. INTRODUCTION

Once the individual screening processes for demand-side, supply-side, and environmental compliance resources reduced the options to a manageable number, the next step was to integrate these options into the resource plan. This chapter will describe the integration process, the sensitivity analyses, the selection of the 2011 IRP, and its general implementation.

B. RESOURCE INTEGRATION PROCESS

The goal of the integration process was to take all of the pre-screened EE, supply-side, and the environmental compliance options, and develop an integrated resource plan using a consistent method of evaluation. The tools used in this portion of the process were the Ventyx System Optimizer model and the Ventyx Planning and Risk model.

1. Model Descriptions

Engineering Screening Model

Duke Energy's in-house Engineering Environmental Compliance Planning and Screening Model (Engineering Screening Model) is a Microsoft Excel-based spreadsheet program that is used to screen environmental compliance technology options down to those that are most economic for further consideration in the System Optimizer model. The model incorporates the operating characteristics of the Duke Energy Indiana units (net MW, heat rates, emission rates, emission control equipment removal rates, availabilities, variable O&M expenses, *etc*.), and market information (energy prices in the form of a price duration curve, emission allowance prices, and fuel prices), calculates the dispatch costs of the units, and dispatches them independently against the energy price curve. The model calculates generation, emissions, operating margin, and, ultimately, free cash flow with the inclusion of capital costs.

The Engineering Screening Model also contains costs and operating characteristics of emission control equipment. This includes wet and dry flue gas desulfurization equipment (FGD or scrubber) and in-duct trona injection for SO_2 removal; selective and non-selective catalytic reduction (SCR and SNCR) and low NO_x burners (LNB) for NO_x removal; baghouses with activated carbon injection (ACI) for mercury removal; and various fuel switching options with related capital costs (such as a switch to lower sulfur content coal with required electrostatic precipitator upgrades). The model also appropriately treats emission reduction co-benefits, such as increased mercury removal with the combination of SCR and FGD.

The screening operation of the Engineering Screening Model involves testing the economics of the many various combinations of emission control equipment on each unit individually by calculating the net present value (NPV) of the change in free cash flow due to adding an emission control technology or fuel switch. The model ranks the alternatives by NPV. This model is considered proprietary confidential and competitive information by Duke Energy.

System Optimizer

System Optimizer is an economic optimization model that can be used to develop integrated resource plans while satisfying reliability criteria. The model assesses the economics of various resource investments including conventional units (*e.g.,* CTs, CCs, coal units, IGCCs, *etc.*), renewable resources (*e.g.*, wind, biomass), and EE resources.

System Optimizer uses a linear programming optimization procedure to select the most economic expansion plan based on Present Value Revenue Requirements (PVRR). The model calculates the cost and reliability effects of modifying the load with demand-side management programs or adding supply-side resources to the system.

Planning and Risk

Planning and Risk is not a generation expansion model. It is principally a very detailed production costing model used to simulate the operation of the electric production facilities of an electric utility.

Some of the key inputs include generating unit data, fuel data, load data, transaction data, EE data, emission and allowance cost data, and utility-specific system operating data. These inputs, along with its complex algorithms, make Planning and Risk a powerful tool for projecting utility electric production facility operating costs.

2. Identify and Screen Resource Options for future Consideration

The IRP process evaluates EE and supply-side options to meet customer energy and capacity needs. The Company develops EE options for consideration within the IRP based on input from our collaborative partners and cost-effectiveness screening. Supply-side options reflect a diverse mix of technologies and fuel sources (gas, coal, nuclear and renewable). Supply-side options are initially screened based on the following attributes:

- Technically feasible and commercially available in the marketplace
- Compliant with all federal and state requirements
- Long-run reliability
- Reasonable cost parameters.

The Company compared capacity options within their respective fuel types and operational capabilities, with the most cost-effective options being selected for inclusion in the portfolio analysis phase.

Over the 20 year planning period, a 200 MW capacity addition to the Duke Energy Indiana system translates to a 3% increase in reserve margin. Therefore, some of the generic supply-side options were modeled in blocks smaller than either the optimal economic or the commercially available sizes of these units. For example, the CT and CC units were limited to blocks of 185 MW and 325 MW, respectively. Actual units utilizing these technologies are normally much larger.

Using comparably sized units also creates a more level playing field for these alternatives in the model so that choices will be made based on economics rather than being unduly influenced by the sizes of units in comparison to the reserve margin requirement. This is a conservative assumption because supply-side screening typically showed that the largest unit sizes available for any given technology type were the most cost-effective, due to economies of scale. If smaller units were required for Duke Energy Indiana, the capital costs on a $/kW basis would be much higher than the cost estimates used in this analysis. Duke Energy Indiana could take advantage of the economies of scale from a larger unit by jointly owning such a unit with another utility or by signing a Purchased Power Agreement from such a facility.

There is not currently an Indiana or federal renewable energy portfolio standard. However, to assess the impact to the long-term resource need, the Company believes it is prudent to plan for a renewable energy portfolio standard. In this resource plan, an assumption was made that 10% of retail sales would be met with renewable energy sources by 2025, starting in 2016 at 1.0% and increasing 1.0% per year through 2025. Based on the results of the screening curve analysis and support from the renewable strategy and compliance group, the renewables that were made available to the model were Biomass (including Bio-Methane), Wind and Solar.

Based on the results of the screening analysis, the following technologies in Table 8-A were included in the quantitative analysis as potential supply-side resource options to meet future capacity needs:

Table 8-A Technologies Considered

Technology	Cost Basis (Nominal MW)	Modeled in System Optimizer (Nominal MW)	% Peak Contribution
Nuclear	1,117 (2 units)	372	100%
Supercritical Coal	825	413	100%
Supercritical Coal 90% Carbon Capture	578	289	100%
IGCC	618	309	100%
IGCC 90% Carbon Capture	429	215	100%
Simple Cycle CT	204 (4 units)	204	100%
Combined Cycle CC	500 Unfired 150 Duct fired	274 Unfired 52 fired	100%
Wind	150	100	10%
Solar	25	2	38%
Biomass	100	25	100%
Bio-methane	2	2	100%

As shown in Table 8-A, nuclear units were considered as resource alternatives beginning in 2025 in the development of this IRP. The reason for this modeling assumption is that allowing such alternatives can provide insights into what kinds of resources may be needed in the future, especially given the potential for future constraints on carbon emissions.

In September of 2010, Duke Energy Indiana submitted a proposed portfolio of Core Plus energy efficiency programs for approval under Cause No. 43955. These programs will augment the Core Programs offered by the TPA, are intended to meet the Commission mandated efficiency targets, and offer additional opportunities for customers to save energy through both residential and non-residential programs. The conservation EE programs were modeled as one bundle that could be selected based on economics. The assumption was made that these costs and impacts would continue throughout the planning period.

Demand response programs contain customer-specific contract curtailment options, Power Manager (residential direct load control), and PowerShare® (for non-residential customers). The DR programs were modeled as four separate entities:

- Power Manager – Direct Load Control
- Interruptible – Nucor/SDI
- PowerShare® - Demand Response
- PowerShare® - Behind The Meter Generation

Any generic resources selected by the model represent "placeholders" for the type of capacity needs on the system. The "peaking" and "intermediate" duty market or base load purchase needs can be fulfilled by purchases from the market, cogeneration, repowering, or other capacity that may be economical at the time decisions to acquire new capacity are required. Decisions concerning coordinating the construction and operation of new units with other utilities or entities can also be made at the proper time.

The integration analysis in System Optimizer was performed over a twenty year period (2011-2031). The final detailed production costing modeling in Planning and Risk was performed over the same time period. However, additional years of fixed costs and escalated production costs are included to better incorporate end effects.

3. Develop Theoretical Portfolio Configurations

A screening analysis using the System Optimizer model was conducted to identify the most attractive capacity options under the expected load profile as well as under a range of risk cases. This step began with a nominal set of varied inputs to test the system under different future conditions such as changes in fuel prices, load levels, and environmental requirements. These analyses yielded many different theoretical configurations of resources required to meet an annual 14.2 percent target planning reserve margin while minimizing the long-run revenue requirements to customers, with differing operating (production) and capital costs.

The nominal set of inputs included:

- Fuel costs and availability for coal, gas, and nuclear generation;
- Development, operation, and maintenance costs of both new and existing generation;
- Compliance with current and potential environmental regulations;
- Retirement of Gallagher 1 and 3 in 2012, Wabash River 2-6 in 2015,[15] and CT at Miami Wabash and Connersville in 2021;
- Cost of capital;
- The projected load and generation resource need;
- A menu of new generation resource options with corresponding costs and timing parameters;
- An assumed level of NO_x, SO_2 based on the CAIR, now the CSAPR; and
- Carbon
  - Cap-and-Trade legislation with an assumed level of CO_2 prices.
  - Clean Energy Standard with an Alternative Compliance Payment.

Several insights from the review of the System Optimizer sensitivity analysis include:

- Reference Case – Combustion Turbines are shown to be the most economical way to meet short term needs, while combined cycle capacity and energy would be the best way to meet long term needs. As will be shown in the detailed portfolio analysis, the difference between PVRRs in the reference case CT and CC portfolios is not materially different.
- No Renewables – If a RPS is not included in the resource plan, the peak resource need is increased 100 MW by 2020 and 270 MW by 2031. The revenue requirement associated with the renewable portfolio was $800 Million (PVRR) higher than the no renewable portfolio.
- High Load and Low Fuel/Market Cost – These sensitivities resulted in higher selection of combined cycle generation.

[15] The analysis for the retirement of Wabash River units 2-6 is discussed in Chapter 8 Section C, part 1.

- Low Load and High Fuel/Market Cost – These sensitivities did not impact the optimal resource mix as compared to the base assumptions.
- High CO_2 – This sensitivity showed an increase in combined cycle generation as well as nuclear generation in the 2020-2031 time horizon.

A representative range of generation plans was then created reflecting plant designs, lead times and environmental emissions limits. Recognizing that different generation plans expose customers to different sources and levels of risk, a variety of portfolios were developed to assess the impact of various risk factors on the costs to serve customers. The portfolios analyzed for the development of this IRP focused in the short term on the replacement option for Wabash River Units 2-6 in 2015 and in the longer term on the impacts of different carbon policies.

The information shown on the following pages outlines the planning options that were considered in the portfolio analysis phase. Each portfolio contains both demand response and conservation that is projected to be available and the estimated impact of a Renewable Energy Portfolio Standard (REPS).

4. Conduct Planning and Risk Portfolio Analysis

Portfolio options were tested under the nominal set of inputs as well as a variety of risk sensitivities and scenarios, in order to understand the strengths and weaknesses of various resource configurations and evaluate the long-term costs to customers under various potential outcomes. Five scenarios were chosen using two different carbon regulatory constructs to illustrate the impacts of key risks and decisions.

- Reference Case (RC) (Cap-and-trade program): CO_2 price curve beginning in 2016 represents the potential for future federal climate change legislation. The CO_2 prices Duke Energy is utilizing fall at the lower end of the range of prices that were estimated to result from federal climate change legislation that was proposed and debated in Congress over the past few years, including H.R. 2454 – the American Clean Energy and Security Act of 2009, which passed the U.S. House of Representatives on June 26, 2009.

- Clean Energy Legislation (CES): In addition to evaluating a potential CO_2 cap-and-trade option, the impact of potential federal Clean Energy legislation without a separate price on CO_2 emissions was also evaluated. Assumptions used in this analysis include:
  - 10% of retail sales in 2015 must be supplied by clean energy resources, increasing to 30% by 2030.
  - Resource Options that qualify as clean energy include renewable resources, energy efficiency (can be used to meet up to 25% of the requirement), new nuclear generation, coal generation with carbon capture and sequestration, and 50 percent credit for new combined cycle natural gas generation.
  - An alternative compliance payment ($50/MWh) available as a compliance option.

The five portfolios that were analyzed are shown below:

1. Reference Case: Cap & Trade - Combined Cycle portfolio (RC - CC)
2. Reference Case: Cap & Trade - Combustion Turbine portfolio (RC - CT)
3. Reference Case: Cap & Trade - Nuclear portfolio (RC - Nuclear)
4. Clean Energy Standard – Combined Cycle Portfolio (CES – CC)
5. Clean Energy Standard – Nuclear and Combine Cycle Portfolio (CES – Nuclear)

An overview of the specifics of each portfolio is shown in Table 8-B below.

The sensitivities chosen to be performed for these scenarios were those representing the highest risks going forward. The following sensitivities were evaluated in the Reference Case scenarios:

- Load forecast variations
  - Increase relative to base forecast (+10% for peak demand and energy by 2031)
  - Decrease relative to base forecast (- 10% for peak demand and energy by 2031)

- Fuel/Market price variability
  - Higher Fuel/Market Prices (coal prices 25% higher, natural gas prices 20% higher, market prices average 20% higher)
  - Lower Fuel Prices (coal, natural gas, market prices 40% lower)
- Emission allowance price variability
  - Higher CO_2 Prices – Based on projected impact of Waxman/Markey legislation
- Energy Efficiency
  - The Low Energy Efficiency sensitivity includes an alternate energy efficiency scenario that provides potential impacts if a lower level of energy efficiency is achieved.
- Renewables
  - A no renewables case was performed to determine the impact on the expansion plan and determine the cost of implementing the program.
- Purchases and Sales –
  - The base assumption was to allow market purchases but not market sales in the System Optimizer model to develop the base portfolios. This allows the development of a portfolio that is optimized to meet customers' needs while taking advantage of market purchases, but not speculative market sales. However, sensitivities were modeled in Planning and Risk allowing market sales to determine the impact on portfolio economics.

Table 8-B – Portfolios Evaluated (Summer Peak MW)

Year	Portfolio				
	RC - CT	RC - CC	RC-Nuclear	CES CC	CES Nuclear
2012					
2013					
2014					
2015	370 MW (CT)	325 MW (CC)	370 MW (CT)	325 MW (CC)	325 MW (CC)
2016					
2017		185 MW (CT)			
2018	185 MW (CT)		185 MW (CT)	185 MW (CT)	185 MW (CT)
2019					
2020					
2021	185 MW (CT)	185 MW (CT)	185 MW (CT)	325 MW (CC)	325 MW (CC)
2022		185 MW (CT)			
2023	185 MW (CT)		185 MW (CT)	325 MW (CC)	300 MW (Nuc)
2024					
2025		185 MW (CT)			
2026					
2027				325 MW (CC)	300 MW (Nuc)
2028	325 MW (CC)	325 MW (CC)	300 MW (Nuc)		
2029					
2030		70 MW (CT)	50 MW (CT)		
2031	30 MW (CT)				60 MW (CT)
Total CT	1140 MW	810 MW	1160 MW	185 MW	245 MW
Total CC	325 MW	650 MW		1300 MW	650 MW
Total Nuclear			300 MW		600 MW
Total Retire	1114 MW	1114 MW	1114 MW	1114 MW	1114 MW

C. QUANTITATIVE ANALYSIS RESULTS

1. Evaluation of Retirement Decision at Wabash River

The purpose of this analysis was to evaluate the cost effectiveness of controls on Wabash River to meet anticipated environmental regulatory requirements versus retirement and replacement of this generation with either new combustion turbine or combined cycle generation. Using the results of the Engineering Screening Model the anticipated control requirements to meet future environmental regulations are listed below.

Wabash River Units 2-6

- Fabric Filter (Baghouse) – Used for Air Toxic and SO_2 Control
- Activated Carbon Injection – Used in conjunction with the fabric filter for Mercury control
- Selective Non Catalytic Reduction – Used for NO_x reduction
- Trona Injection – Used in conjunction with the fabric filter for SO_2 control
- Continuous Emission Monitors – Used for measurement of mercury and other air toxics
- Dry Flyash and Bottom Ash Conversion – Required for placement of in a lined landfill versus an ash basin.
- Lined Landfill – Required in lieu of an ash basin for ash disposal.
- Wastewater treatment – Used for treatment of the station wastewater treatment in lieu of existing ash basin.
- Intake Screens and Modifications – Used for control on fish impingement and entrainment on the water intakes.

The capital cost and increased fixed and variable O&M associated with these controls were incorporated into the analysis. To meet the requirements of the SO_2 Control requirements associated with the CSAPR and lower SO_2 NAAQS, it is also anticipated that Wabash River would have to switch to a lower sulfur fuel with this equipment set.

The equipment selection above was an estimate of the minimum control requirements to meet the environmental regulatory requirements. Longer term there is a risk of more advanced control like Flue Gas Desulfurization for SO_2 control and Selective Catalytic Reduction for NO_x control on Wabash River Unit 6 which would increase the capital cost substantially.

Four portfolios were developed to evaluate the cost effectiveness of installation of controls versus retirement of the station and replacement with new natural gas fired generation.

- Base Case – Retire Wabash River 2-6 in 2015 and replace with combustion turbine capacity.
- Wabash River 6 Light Control Case – Installation of environmental controls described above on unit 6 only and replace units 2-5 with new combustion turbine generation due to increased environmental regulatory requirements.
- Wabash River 6 Strict Control Case – Installation of environmental controls (including Dry FGD) described above on unit 6 only and replace units 2-5 with new combustion turbine generation due to increased environmental regulatory requirements.
- Wabash River 2-6 Control Case – Installation of environmental controls described above on units 2-6 (Light Controls on unit 6).

Each case was evaluated with the detailed production cost model PAR and the PVRR was calculated incorporating the production and capital cost. Table 8-C below represents a comparison of the PVRRs for each case.

Table 8-C PVRR Comparisons

Portfolio	Delta (Cost Over Base)	Delta (Cost Over Base)
Wabash River 6 Light Control Case	$250,000,000	0.83%
Wabash River 6 Strict Control Case	$500,000,000	1.68%
Wabash River 2-6 Control Case	$655,000,000	2.19%

The Base Case was the lowest cost option to customers versus installation of controls. There is a significant risk that additional environmental controls could be required as future environmental regulatory requirements emerge in the future.

2. Evaluation of Markland Upgrade

An upgrade to the existing hydro units at Duke Energy Indiana's Markland Hydro facility was considered as a candidate resource in this year's IRP analyses. The generators have had polarization index testing completed in 2008 and 2009. The testing results are still within operating allowable ranges, however, the results are at the lower end of the operational recommendation. Based on engineering estimates of degradation, the generators are near the end of their useful life and refurbishment will be needed in the next 10 years. The existing turbine blades and entire runner assemblies on the three hydro turbine units at Markland are nearing the end of their useful lives. The existing blades have required repairs to cracks every 3-4 years over their lifetime. The continued repairs lead to fatigue of the blade material which eventually make further repair difficult. As an alternative to replacement in-kind, a replacement of the existing turbine blades and entire runner assemblies with a more efficient design was considered. The updated design will increase the flow rate up to 15%. This upgrade is estimated to increase the capability of each of the three turbines by approximately 3.5 MW each, for a total of about 10.5 MW for the facility, and annual energy production would increase by a commensurate amount. While maintenance and repairs at the Markland facility are also required for either the in-kind or the upgraded project, the incremental cost associated with the turbine upgrade was generally assumed to be the estimated cost of the upgraded runner assemblies and associated equipment less the estimated costs for the same scope of work with replacement in-kind runner assemblies. An analysis was performed to determine the cost effectiveness of the upgrade using Planning and Risk with the results showing a net benefit of $40 million (PVRR 2011 dollars) to upgrade the Markland facility. Although the Markland turbine upgrade is cost effective, the incremental 10.5 MWs addition was not included in this resource plan due the uncertainty of when the unit refurbishment will occur.

3. Environmental Compliance Control Equipment

New environmental control upgrades included in this resource plan are shown in Table 8-D. These expected control requirements were derived from the Engineering Screening Model discussed in Chapter 6, Section G. The economic optimization and production costing models were updated to include the operational impacts of the control equipment.

Table 8-D Emission Control Equipment Installation Dates

	Mercury		SO2		NO_x		Water	CCR
Unit	Baghouse	Additives	FGD	DBA	SCR	SNCR	Intake Modifications	Ash Handling/ Landfill
Cayuga 1		2015		2017	2017		2016	2016
Cayuga 2		2015		2017	2017		2016	2016
Gallagher 2		2015				2018	2017	2017
Gallagher 4		2015				2017	2017	2017
Gibson 1		2015		2017			2016	2016
Gibson 2		2015		2017			2016	2016
Gibson 3	2014	2015		2017			2016	2016
Gibson 4	2015	2015					2016	2016
Gibson 5	2015	2015	2015				2016	2016

4. Detailed Portfolio Analysis

The focus of the detailed portfolio analysis was to determine optimum resource selection in 2015 when Wabash River is retired and to identify the type and timing of future generation in the longer term under Cap-and-Trade and Clean Energy Standard constructs. The potential resource planning strategies were tested under base assumptions and variations in fuel and energy cost, load, energy efficiency, and renewables.

For the base case and each sensitivity, the PVRR was calculated for each portfolio. The revenue requirement calculation estimates the cost to customers for the Company to recover system production cost and new capital incurred. A 50-year analysis time frame was used to fully capture the long-term impact of the technology selected to replace Wabash River in 2015. Table 8-E below represents a comparison of the Reference Case Combined Cycle portfolio (RC-CC) to the Reference Case Combustion Turbine portfolio (RC-CT)

Table 8-E[16]
Comparison of CT and CC Portfolios (Cap and Terade Construct)

	Reference Case	Renewable Sensitivity	Carbon Price Sensitivity	Sales Sensitivity	Fuel Price Sensitivity		Load Sensitivities		
Portfolio		No RPS	High CO2	High Sales	High Fuel Cost	Low Fuel Cost	High Load	Low Load	Low EE
CT	$25				$20			$182	$16
CC		$63	$615	$28		$72	$162		

CC and CT generation were essentially equal in terms of the cost to customers in the base case. For example, the $25 million in reduced PVRR for the CT Portfolio represents 0.05% of the total cost for the CT Portfolio. However, the CC Portfolio was more robust over the range of sensitivities and has a significant advantage in a CES regulatory construct.

Table 8-F displays a comparison of the Reference Case Nuclear Portfolio (RC-Nuclear) to the Reference Case Combustion Turbine Portfolio (RC-CT) under the Cap and Trade regulatory construct.

[16] The green block represents the lowest PVRR between the two options and the value contained within the block is the PVRR savings in millions between the two portfolios.

Table 8-G represents a comparison between the CC Portfolio (CES-CC) and the Nuclear Portfolio (CES-Nuclear) under the Clean Energy Standard regulatory construct. The CC Portfolio versus the CT Portfolio was chosen to compare against the Nuclear portfolio due to the credit combined cycle generation is given towards the clean energy requirement.

Table 8-F
Comparison of CT and Nuclear Portfolios (Cap and Trade Construct)

	Reference Case	Carbon Price Sensitivity	Fuel Price Sensitivity	
Portfolio		High CO2	High Fuel Cost	Low Fuel Cost
CT				$350
Nucl	$91	$599	$292	

Table 8-G
Comparison of CC and Nuclear Portfolios (Clean Energy Plan Construct)

Clean Energy Plan Construct	
Portfolio	
CC	
Nucl	$523

A review of the results of the nuclear option in either the Cap and Trade or the CES regulatory construct, clearly indicates that new nuclear capacity and energy in the 2025 to 2030 timeframe would benefit Indiana customers. However, due to the uncertainty in carbon legislation, simulation results are provided solely for informational purposes.

5. Resource Plan Selection

Short Term (2012-2017)

In the short term, the analysis concentrated on determining the best generation option in the 2015 timeframe to meet the required MISO 14.2% reserve margin. Using current planning assumptions, the recommended replacement option is the installation or purchase of 325 MW of CC capacities in 2015. While CC generation was selected as the optimal replacement resource, CT generation was also competitive as a replacement resource. CC and CT generation were essentially equal in terms of the cost to customers in the base case, but CC generation was selected due to its increased operational flexibility, the need of the portfolio for mid-merit generation, its robustness over the range of sensitivities considered and the advantage it has under a CES regulatory construct.

Multiple options are being evaluated to secure this additional capacity need that may include purchased power, purchase of existing generating capacity or Company-owned generation. Also, depending on the final outcome of the Utility Boiler MACT Rule, there is a potential to continue to operate coal units scheduled to be retired through 2015 if new generation is located at that facility. If this option is pursued, it would also delay the capacity need until 2016 versus 2015 as currently planned.

The next capacity need after 2015 is a 185 MW peaking resource in 2017. If the anticipated renewable energy requirements do not develop, this capacity need would accelerate to 2016. Given the uncertainty of the timing and how the capacity need will be met in this timeframe, the 2015 and 2017 resource needs may be addressed as one resource need.

As the new EPA regulations are finalized in 2011 and 2012, the Company will develop a detailed strategy and seek regulatory approval through the CPCN process.

Long Term (2017-2031)

In the longer term the next capacity need is in 2021. This need is driven primarily by the anticipated retirement of the older CT units at Miami-Wabash and Connersville. The 2021 retirement date is not a firm date, but by 2021 these CTs will be over 50 years old and at or near the end of their lives. Each CT is tested once per year to meet the MISO reliability requirements. Given the age of these turbines and the availability of spare parts, if significant maintenance is required to meet the reliability requirements, the retirement decision on a specific unit could accelerate.

The long-term capacity needs after 2021 are anticipated to be met with CC or CT generation. However, new nuclear generation appears to be cost-effective in the 2025-2030 timeframe in both the cap-and-trade and clean energy regulatory constructs. When there is more certainty with regard to how and when carbon emissions will be regulated, new nuclear generation should be considered for meeting a portion of the generation need.

Figure 8-A shows Duke Energy Indiana's Load, Capacity, and Reserves table for the years 2011 - 2031. Figure 8-B shows detailed incremental capacity additions and Figure 8-C shows the Capacity and Energy mix in 2011 and 2031.

Figure 8-A Load, Capacity and Reserves Table[17]

Summer Projections of Load, Capacity, and Reserves
for Duke Energy Indiana 2011 Annual Plan

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Load Forecast																					
1 DEI System Peak	6,605	6,701	6,841	6,926	6,681	6,855	6,935	7,024	7,134	7,163	7,251	7,363	7,437	7,534	7,597	7,652	7,745	7,852	7,938	8,057	8,111
Reductions to Load Forecast																					
2 New Conservation Programs	(13)	(37)	(69)	(104)	(140)	(182)	(232)	(287)	(345)	(345)	(350)	(354)	(359)	(363)	(368)	(373)	(377)	(358)	(364)	(369)	(373)
3 Demand Response Programs	(419)	(409)	(423)	(436)	(448)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)	(452)
4 Adjusted Duke System Peak	**6,173**	**6,254**	**6,349**	**6,386**	**6,094**	**6,221**	**6,251**	**6,284**	**6,337**	**6,366**	**6,449**	**6,557**	**6,626**	**6,718**	**6,777**	**6,827**	**6,916**	**7,041**	**7,122**	**7,235**	**7,286**
Cumulative System Capacity																					
4 Generating Capacity	7,236	7,060	7,133	7,719	7,719	6,741	6,741	6,735	6,735	6,735	6,735	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569
5 Capacity Additions	0	353	586	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 Capacity Derates	0	0	0	0	(310)	0	(6)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 Capacity Retirements	(176)	(280)	0	0	(668)	0	0	0	0	0	(166)	0	0	0	0	0	0	0	0	0	0
8 Cumulative Generating Capacity	7,060	7,133	7,719	7,719	6,741	6,741	6,735	6,735	6,735	6,735	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569	6,569
Purchase Contracts																					
9 Cumulative Purchase Contracts	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0	0	0	0
10 Behind the Meter Generation	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
12 Cumulative Future Resource Additions																					
Base Load	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peaking/Intermediate	0	0	0	0	325	325	510	510	510	510	695	880	880	880	1,065	1,065	1,065	1,390	1,390	1,460	1,460
Renewables	0	0	0	0	0	12	24	36	67	107	133	155	181	193	212	222	235	238	258	258	271
13 Cumulative Production Capacity	**7,088**	**7,161**	**7,747**	**7,747**	**7,094**	**7,106**	**7,297**	**7,309**	**7,340**	**7,380**	**7,425**	**7,632**	**7,658**	**7,670**	**7,874**	**7,884**	**7,897**	**8,216**	**8,235**	**8,305**	**8,318**
Reserves																					
14 Generating Reserves	915	907	1,398	1,361	1,000	885	1,046	1,025	1,003	1,014	976	1,075	1,032	951	1,097	1,056	981	1,174	1,113	1,070	1,032
15 % Reserve Margin	**14.8%**	**14.5%**	**22.0%**	**21.3%**	**16.4%**	**14.2%**	**16.7%**	**16.3%**	**15.8%**	**15.9%**	**15.1%**	**16.4%**	**15.6%**	**14.2%**	**16.2%**	**15.5%**	**14.2%**	**16.7%**	**15.6%**	**14.8%**	**14.2%**
16 % Capacity Margin	12.9%	12.7%	18.0%	17.6%	14.1%	12.5%	14.3%	14.0%	13.7%	13.7%	13.2%	14.1%	13.5%	12.4%	13.9%	13.4%	12.4%	14.3%	13.5%	12.9%	12.4%

[17] The 310 MW derate in 2015 (row 6) reflects expiration of Gibson 5 back-up to IMPA and WVPA 12/31/14

Figure 8-B DUKE ENERGY INDIANA INTEGRATED RESOURCE PLAN 2012-2031						
Year	Retirements	Additions[1]	Renewables (Nameplate MW)[2]			Major Environmental Control Upgrades[3]
			Wind	Solar	Biomass	
2011	Edwardsport 6-8 (160 MW) Miami Wabash 4 (16 MW)	10 MW Summer Purchas				
2012	Gallagher 1 & 3 (280 MW)	Edwardsport IGCC (586 MW) Vermillion (352.5 MW)				
2013						
2014						
2015	Wabash River 2-6 (668 MW) Gibson 5 Contract (310MW)	325 MW CC				Gibson 5 New Scrubber Gibson 3-5 Baghouses
2016			100		2	
2017		185 MW CT	100		2	Cayuga 1&2 SCR Gallagher 2&4 SNCR
2018			100		2	
2019				9	27	
2020			100	9	27	
2021	Connersville 1&2 CT (86 MW) Miami-Wabash 1-3,5-6 CT (80 MW)	185 MW CT	200	10	2	
2022		185 MW CT	100	27	2	
2023			100	35	2	
2024			100		2	
2025		185 MW CT	100	18	2	
2026			100			
2027			100	9		
2028		325 MW CC		9		
2029			100	25		
2030		70 MW CT				
2031			100	9		
Total MW	1114	2398.5	1400	160	71	

1 The Edwardsport IGCC unit is scheduled to be in service in the 3rd Quarter of 2012 so it will not be available for summer peak until 2013.

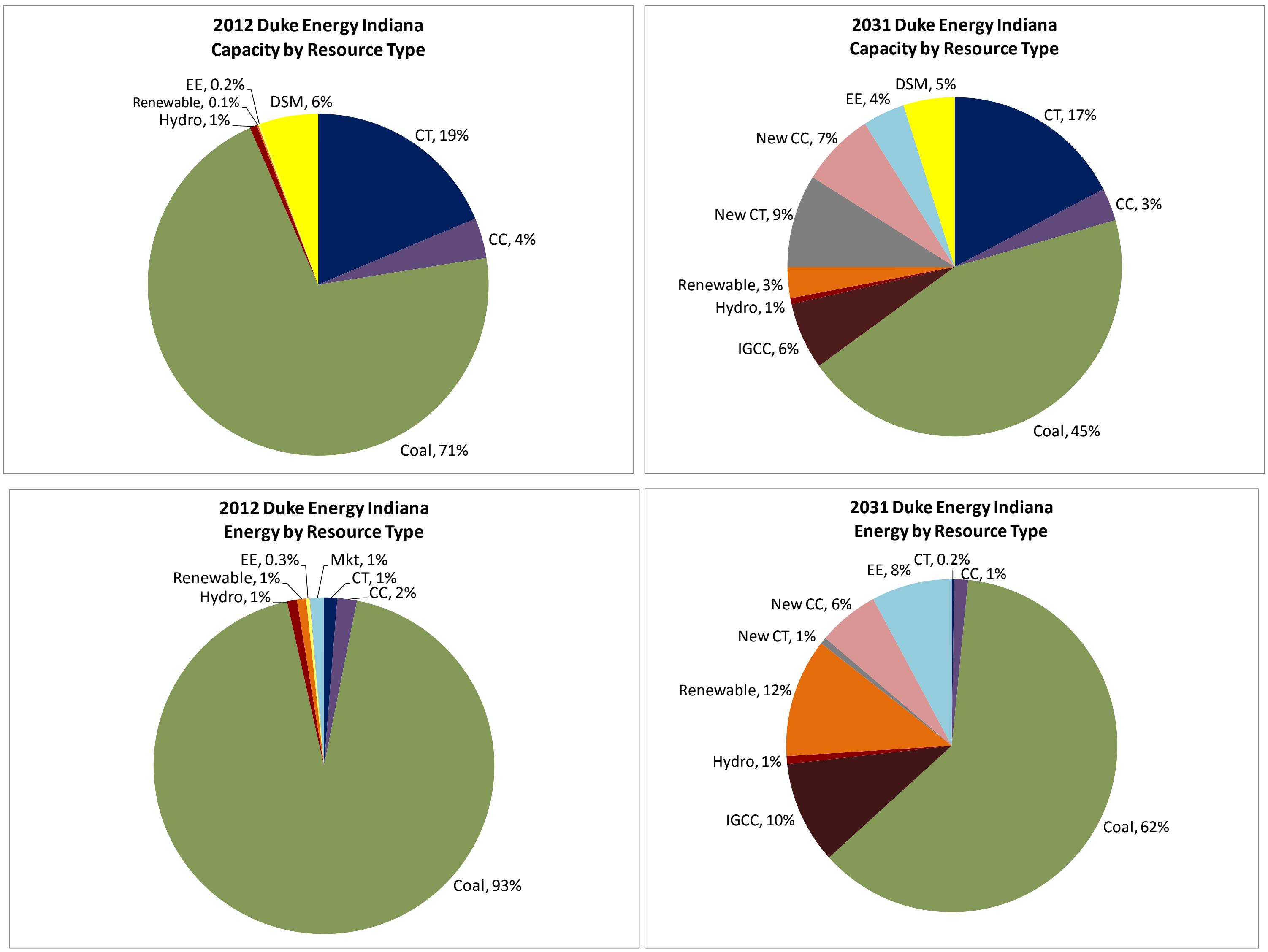
2 Wind and solar MW represent nameplate capacity; for planning purposes, wind has a 10% contribution to peak and solar has 38% contribution to peak.

3 Additional control requirements include additives for mercury control, ash system modifications, additional landfill requirements, and intake structure modifications in the 2015 -2018 time frame.

All plans include the New Energy Efficiency programs. The capacity shown denotes summer ratings.

The figures below represent the changes in the capacity mix and energy mix between 2012 and 2031. The relative shares of renewables, energy efficiency, and gas all increase, while the relative share of coal decreases.

Figure 8-C Generation Mix 2012 and 2031



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Appendix A: Supply Side Screening Curves/ Resource Data

APPENDIX A – Table of Contents

Section | **Page**

1. Supply-Side Screening Curves

The following pages contain the screening curves and associated data discussed in Chapter 5 of this filing.

Duke Energy Indiana and its consultants consider cost estimates to be confidential and competitive information. The redacted information will be made available to appropriate parties upon execution of appropriate confidentiality agreements or protective orders. Please contact Beth Herriman at (317) 838-1254 for more information.

Figure A-1

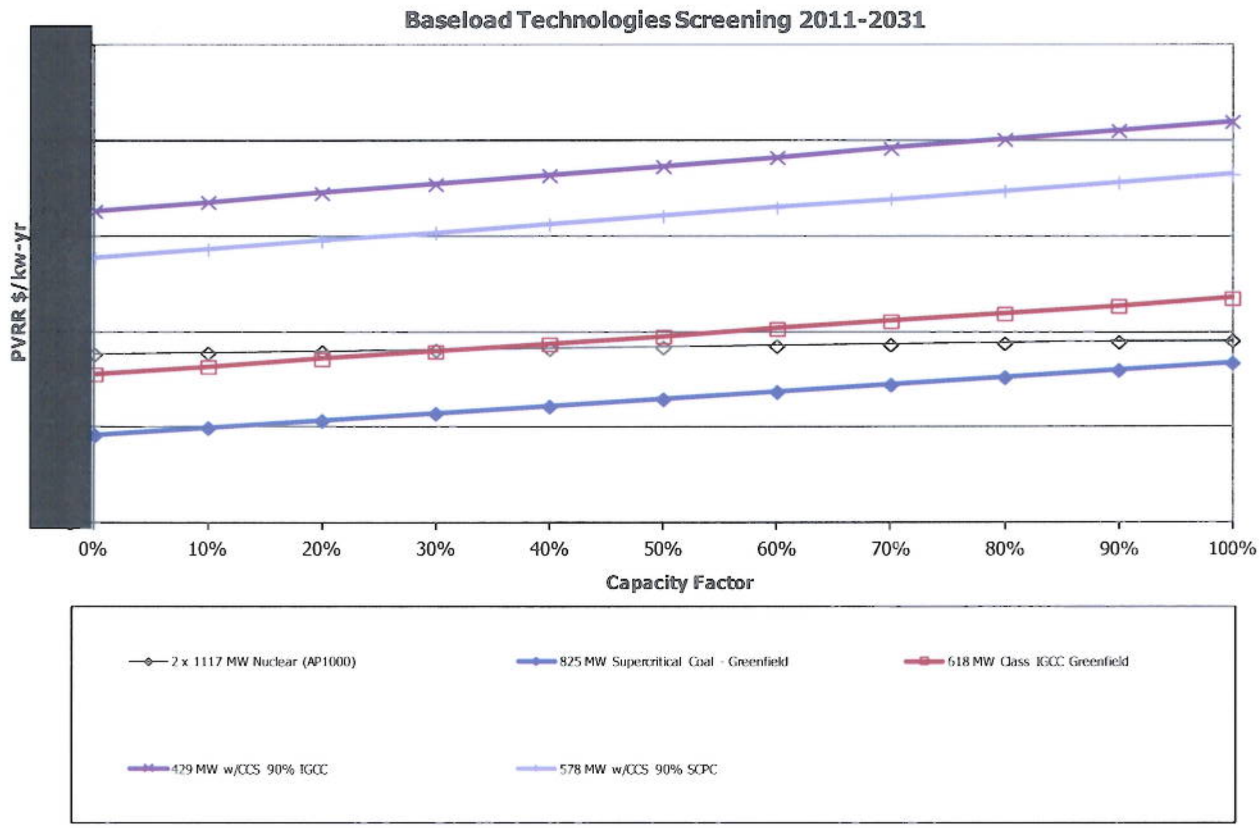

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Figure A-2

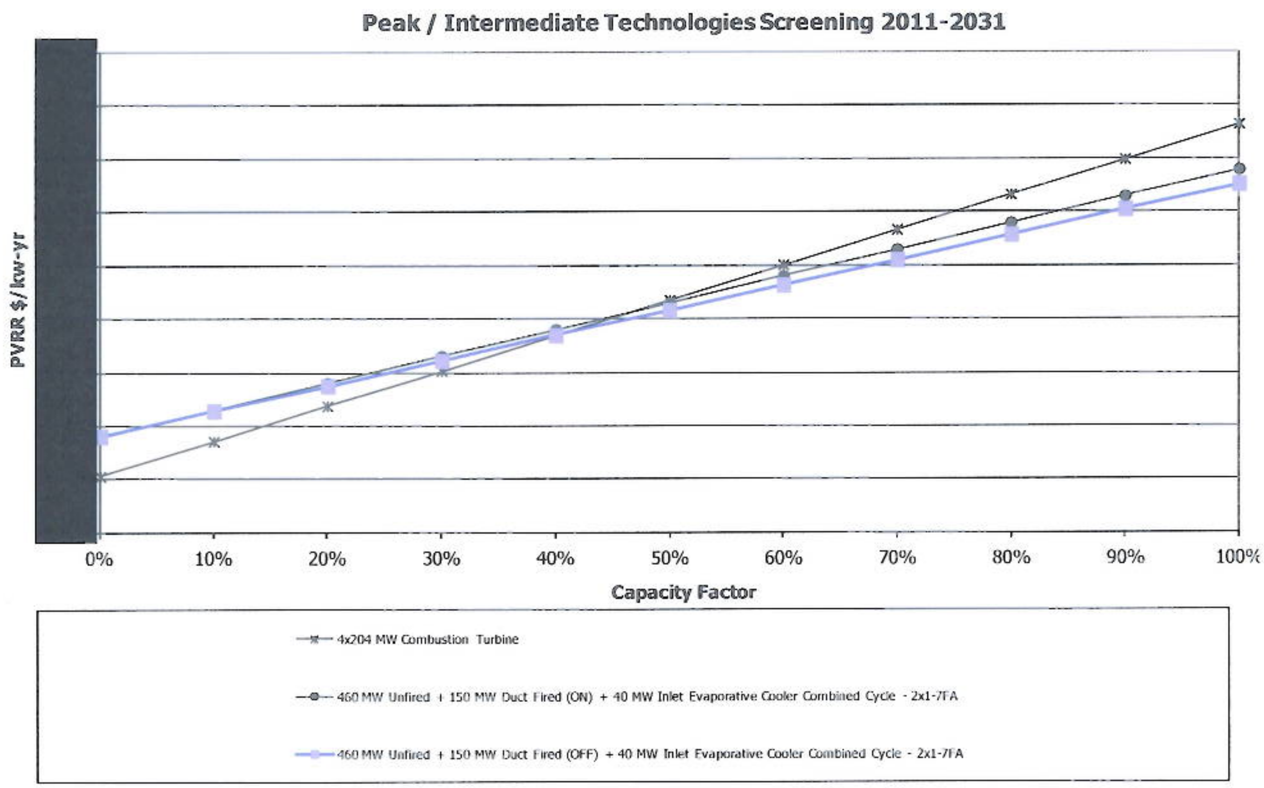

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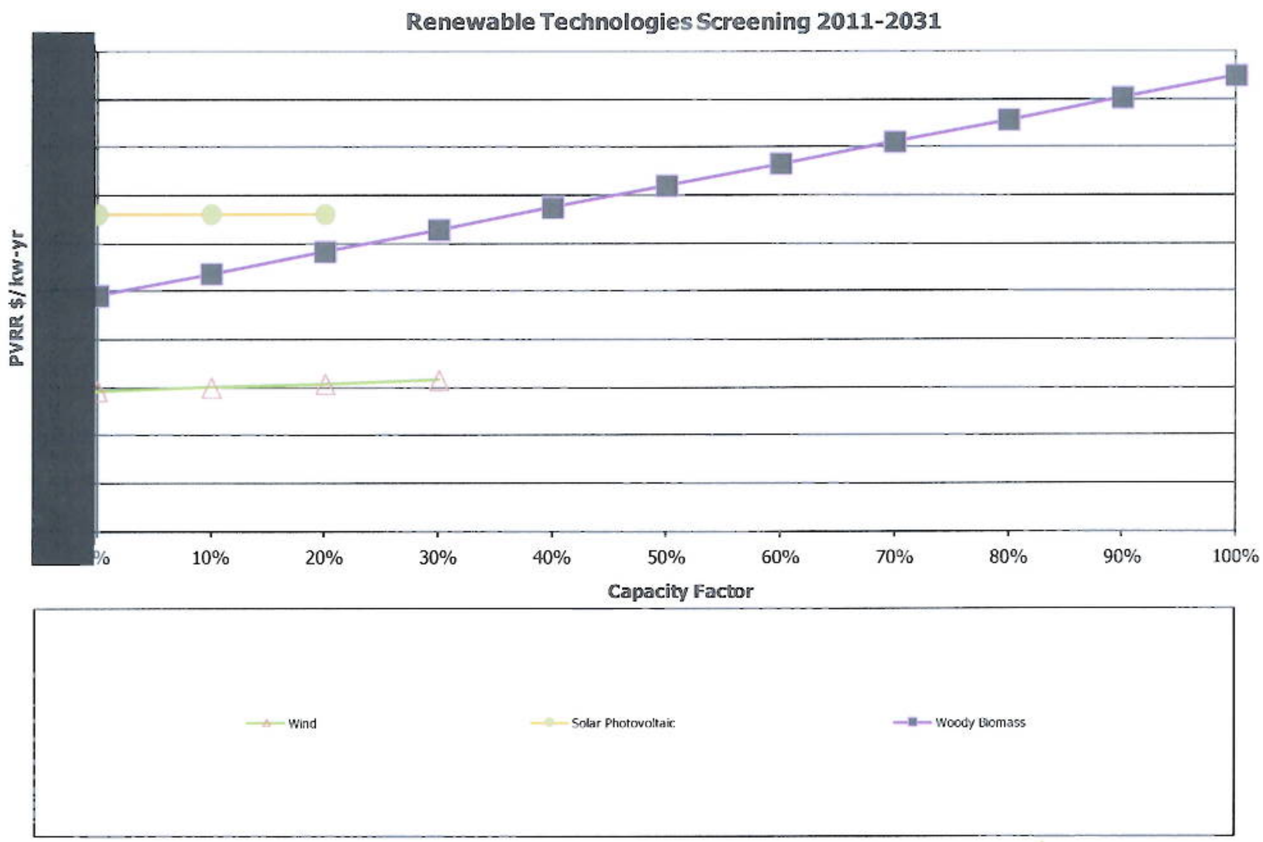
Figure A-3



Renewable Technologies Screening 2011-2031
PVRR $/kw-yr
[redacted]
%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Capacity Factor
Wind
Solar Photovoltaic
Woody Biomass

Figure A-4
Supply Side Technology Information

Discount Rate
Coal Price Escalation Rate
Gas Price Escalation Rate
EA Price Escalation Rate
FOM and VOM Escalation Rate (%)
Confidential business information

[redacted]

		Plant A	Plant B	Plant C	Plant D	Plant E	Plant F	Plant G	Plant H	Plant I	Plant J	Plant K
Technology Description		Supercritical Coal (SCPC) Greenfield	SCPC w/CCS 90%	Nuclear AP1000	IGCC Greenfield	IGCC w/CCS 90%	Combustion Turbine	Combined Cycle 2x1-7FA	Markland Hydro	Wind	Solar PV	Woody Biomass
Book Life/Tax Life	Years	[redacted]										
Nominal Unit Size at 100% Load	MW											
Total Plant Cost for Screening (2011 completion date)	$/kW											
Total Plant Cost for Screening (incl AFUDC-2011 completion date)	$/kW											
Total Plant Cost for Screening (incl AFUDC-2011 completion date)	MM$											
Average Annual Heat Rate	Btu/kWh											
VOM in 2011$	$/MWh											
FOM in 2011$	$/kW-yr											
Equivalent Planned Outage Rate	%											
Equivalent Unplanned Outage Rate	%											
Equivalent Availability	%											
SO_2 Emission Rate	Lbm/MMbtu											
NO_x Emission Rate	Lbm/MMBtu											
Hg Emission Rate	Lbm/Tbtu											
CO_2 Emission Rate	Lbm/MMBtu											

Note:
The values shown above are relative for planning purposes. Absolute values may vary considerably depending on many factors, including but not limited to: unit size, seasonal deratings, specific site requirements, and equipment vendor competition.

2. Fuel and O&M Costs

The fuel costs and annual fixed and variable O&M costs for each unit (both existing and new) in the IRP are voluminous. Duke Energy Indiana also considers them to be trade secrets and confidential and competitive information. They will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Beth Herriman at (317) 838-1254 for more information.

3. Air and Waste Emissions
(IURC Rule - Section 6(a)(4) and (c)(2))

The table on the following page represents the total air emissions projections for Duke Energy Indiana's existing and planned units for this IRP. This table contains total system tons of NO_x, SO_x and CO_2 emissions for the selected case in this IRP. Solid waste disposal and hazardous waste and subsequent disposal costs are included in the analysis, but the model does not quantify these waste streams in its output. Please contact Beth Herriman at (317) 838-1254 for more information.

Figure A-5

Air Emissions
2011 Duke Energy Indiana IRP - Base Case

	CO2 (ktons)	NOx (ktons)	SO2 (ktons)
2011	[redacted]	[redacted]	[redacted]
2012	[redacted]	[redacted]	[redacted]
2013	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]
2018	[redacted]	[redacted]	[redacted]
2019	[redacted]	[redacted]	[redacted]
2020	[redacted]	[redacted]	[redacted]
2021	[redacted]	[redacted]	[redacted]
2022	[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]
2029	[redacted]	[redacted]	[redacted]
2030	[redacted]	[redacted]	[redacted]
2031	[redacted]	[redacted]	[redacted]

Figure A-6
APPROXIMATE FUEL STORAGE CAPACITY

Generating Station	Coal Capacity (Tons)	Oil Capacity (Gallons)
Cayuga	750,000	560,547
Connersville	--	514,800
Edwardsport IGCC	300,000	
Gallagher	350,000	314,736
Gibson	2,500,000 w/two piles	505,000
Miani-Wabash	--	766,600
Noblesville	--	45,300
Wabash River	300,000	346,550

Figure A-7
Duke Energy Indiana
Summary of Long Term Power Purchase Agreements

Supplier	Type	Expiration Date	Summer MW	Winter MW	Notes
Benton County Wind Farm	Wind PPA	April-2028	10	10	10% capacity value used in 2011 IRP
City of Logansport	Unit Peaking	December-2018	8	8	Effective July 1, 2009, Duke Energy Indiana purchased all Logansport Unit #6 capacity from the City of Logansport.

Duke Energy Indiana

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Appendix B:
Electric Load Forecast

APPENDIX B – Table of Contents

1. Load Forecast Dataset
(IURC Rule - Section 4(1))

The Load Forecast Dataset utilized in developing Duke Energy Indiana's 2011 IRP is voluminous in nature. This data will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Beth Herriman at (317) 838-1254 for more information.

2. 2010 Hourly Load Data
(IURC Rule - Section 4(17))

The 2010 hourly load data for the Duke Energy Indiana system is contained on the following pages.

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
1	1	2010	4,037	4,026	4,052	4,045	4,110	4,191	4,283	4,361	4,378	4,430	4,440	4,511
1	1	2010	4,446	4,393	4,328	4,321	4,391	4,623	4,788	4,768	4,793	4,755	4,658	4,557
1	2	2010	4,473	4,408	4,358	4,359	4,401	4,461	4,645	4,699	4,821	4,837	4,916	4,821
1	2	2010	4,738	4,697	4,565	4,586	4,632	4,906	5,112	5,133	5,150	5,114	4,985	4,840
1	3	2010	4,773	4,682	4,692	4,644	4,673	4,774	4,848	4,963	5,034	5,053	4,989	4,913
1	3	2010	4,818	4,753	4,596	4,576	4,690	4,957	5,172	5,178	5,088	4,999	4,819	4,615
1	4	2010	4,483	4,449	4,438	4,452	4,525	4,779	5,104	5,332	5,371	5,326	5,280	5,232
1	4	2010	5,160	5,162	5,059	5,069	5,060	5,303	5,546	5,536	5,493	5,332	5,149	4,986
1	5	2010	4,777	4,673	4,674	4,766	4,875	5,017	5,313	5,556	5,533	5,481	5,441	5,302
1	5	2010	5,216	5,234	5,112	5,082	5,107	5,315	5,498	5,522	5,486	5,350	5,143	4,970
1	6	2010	4,769	4,656	4,684	4,692	4,746	4,958	5,308	5,525	5,498	5,438	5,354	5,285
1	6	2010	5,237	5,207	5,101	4,981	4,991	5,157	5,313	5,354	5,362	5,222	5,002	4,778
1	7	2010	4,627	4,546	4,490	4,463	4,486	4,712	4,974	5,203	5,175	5,172	5,258	5,262
1	7	2010	5,212	5,134	5,142	5,121	5,188	5,280	5,584	5,602	5,523	5,335	5,151	4,986
1	8	2010	4,805	4,787	4,722	4,778	4,826	4,999	5,225	5,382	5,410	5,473	5,433	5,285
1	8	2010	5,286	5,263	5,153	5,117	5,040	5,189	5,293	5,192	5,169	5,006	4,810	4,624
1	9	2010	4,495	4,462	4,454	4,422	4,470	4,441	4,588	4,859	4,918	5,021	5,050	4,991
1	9	2010	4,847	4,760	4,719	4,618	4,690	4,905	5,047	5,038	5,042	4,961	4,830	4,631
1	10	2010	4,548	4,519	4,507	4,473	4,505	4,537	4,606	4,798	4,893	4,912	4,830	4,736
1	10	2010	4,670	4,595	4,484	4,417	4,498	4,782	5,118	5,162	5,117	5,009	4,839	4,739
1	11	2010	4,674	4,587	4,593	4,509	4,556	4,754	5,095	5,386	5,349	5,343	5,273	5,262
1	11	2010	5,192	5,159	5,119	5,051	5,083	5,231	5,371	5,344	5,231	5,021	4,903	4,713
1	12	2010	4,558	4,479	4,403	4,449	4,477	4,639	5,053	5,289	5,177	5,127	5,053	4,922
1	12	2010	4,855	4,814	4,734	4,787	4,763	4,935	5,124	5,116	5,032	4,996	4,814	4,664
1	13	2010	4,480	4,548	4,564	4,602	4,645	4,767	5,134	5,356	5,282	5,131	4,970	4,809
1	13	2010	4,701	4,623	4,523	4,439	4,427	4,585	4,863	4,870	4,833	4,727	4,634	4,375
1	14	2010	4,325	4,208	4,185	4,228	4,320	4,558	4,911	5,141	5,065	4,982	4,881	4,763
1	14	2010	4,661	4,598	4,497	4,473	4,470	4,594	4,759	4,705	4,652	4,528	4,266	4,034
1	15	2010	3,973	3,848	3,838	3,738	3,909	4,105	4,416	4,646	4,632	4,527	4,616	4,571
1	15	2010	4,491	4,420	4,369	4,383	4,400	4,486	4,584	4,508	4,381	4,386	4,216	4,037
1	16	2010	3,927	3,825	3,791	3,770	3,787	3,761	3,915	4,151	4,291	4,357	4,390	4,356
1	16	2010	4,269	4,224	4,148	4,070	4,144	4,231	4,299	4,295	4,231	4,072	3,987	3,890
1	17	2010	3,723	3,612	3,616	3,528	3,599	3,689	3,750	3,921	4,015	4,109	4,166	4,172
1	17	2010	4,227	4,154	4,119	4,042	4,073	4,201	4,339	4,392	4,419	4,293	4,090	4,055
1	18	2010	3,991	3,918	3,880	3,971	3,959	4,174	4,423	4,677	4,694	4,793	4,757	4,817
1	18	2010	4,737	4,848	4,815	4,757	4,789	4,856	4,939	4,934	4,838	4,646	4,448	4,300
1	19	2010	4,115	4,050	4,016	3,994	4,015	4,227	4,620	4,850	4,844	4,837	4,818	4,761
1	19	2010	4,761	4,749	4,666	4,635	4,608	4,685	4,772	4,733	4,709	4,604	4,392	4,176
1	20	2010	4,075	3,996	3,952	3,982	4,084	4,304	4,656	4,821	4,824	4,798	4,818	4,830
1	20	2010	4,867	4,839	4,803	4,711	4,805	4,953	4,958	4,978	4,933	4,777	4,514	4,315
1	21	2010	4,247	4,104	4,102	4,068	4,131	4,342	4,630	4,884	4,918	4,863	4,880	4,871
1	21	2010	4,907	4,878	4,845	4,822	4,784	4,867	4,925	4,851	4,751	4,622	4,375	4,133
1	22	2010	4,023	3,907	3,837	3,777	3,911	4,104	4,411	4,683	4,699	4,714	4,693	4,643
1	22	2010	4,610	4,608	4,567	4,480	4,507	4,539	4,615	4,533	4,458	4,265	4,178	3,981
1	23	2010	3,859	3,770	3,774	3,703	3,668	3,724	3,807	3,996	4,027	4,212	4,218	4,196
1	23	2010	4,196	4,123	4,071	4,051	4,044	4,097	4,233	4,218	4,101	3,950	3,864	3,725
1	24	2010	3,617	3,423	3,410	3,447	3,445	3,504	3,558	3,704	3,785	3,814	3,905	3,907
1	24	2010	3,960	3,957	3,868	3,766	3,796	3,961	4,100	4,108	4,093	4,080	3,932	3,737
1	25	2010	3,708	3,664	3,671	3,703	3,800	4,069	4,399	4,730	4,756	4,754	4,833	4,806
1	25	2010	4,775	4,808	4,815	4,717	4,833	4,901	5,102	5,106	5,026	4,887	4,708	4,488
1	26	2010	4,370	4,302	4,297	4,327	4,419	4,607	4,936	5,184	5,162	5,155	5,167	5,117
1	26	2010	5,136	5,113	5,092	5,045	5,017	5,150	5,290	5,276	5,229	5,080	4,870	4,635
1	27	2010	4,585	4,500	4,433	4,477	4,476	4,778	5,106	5,294	5,200	5,109	4,987	4,876
1	27	2010	4,779	4,725	4,627	4,598	4,661	4,830	4,999	4,976	4,940	4,832	4,614	4,407
1	28	2010	4,240	4,176	4,092	4,130	4,243	4,493	4,883	5,165	5,209	5,152	5,132	5,035
1	28	2010	4,982	4,898	4,810	4,775	4,859	5,034	5,360	5,379	5,348	5,288	5,139	4,879
1	29	2010	4,753	4,750	4,677	4,714	4,802	4,848	5,252	5,491	5,471	5,439	5,391	5,289
1	29	2010	5,252	5,214	5,150	5,010	5,065	5,107	5,259	5,248	5,209	5,129	4,941	4,797
1	30	2010	4,638	4,562	4,502	4,470	4,505	4,625	4,752	4,837	4,900	4,950	4,961	4,837
1	30	2010	4,762	4,622	4,564	4,428	4,450	4,521	4,726	4,773	4,780	4,752	4,631	4,481
1	31	2010	4,346	4,255	4,380	4,370	4,455	4,518	4,577	4,721	4,813	4,670	4,541	4,427
1	31	2010	4,379	4,259	4,198	4,163	4,250	4,344	4,590	4,755	4,758	4,674	4,555	4,435

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
2	1	2010	4,298	4,323	4,308	4,374	4,514	4,615	4,972	5,249	5,229	5,126	5,032	4,947
2	1	2010	4,864	4,740	4,661	4,514	4,470	4,553	4,857	4,914	4,834	4,673	4,510	4,278
2	2	2010	4,171	4,093	4,079	4,061	4,121	4,354	4,702	4,920	4,874	4,855	4,800	4,711
2	2	2010	4,721	4,702	4,651	4,596	4,649	4,782	4,833	4,824	4,789	4,689	4,502	4,282
2	3	2010	4,146	4,073	4,078	4,068	4,166	4,313	4,711	4,929	4,905	4,858	4,887	4,806
2	3	2010	4,760	4,768	4,653	4,602	4,574	4,612	4,845	4,864	4,880	4,783	4,532	4,395
2	4	2010	4,317	4,270	4,265	4,273	4,347	4,555	4,859	5,084	5,048	5,012	4,997	4,831
2	4	2010	4,753	4,785	4,702	4,649	4,583	4,655	4,778	4,832	4,752	4,621	4,477	4,234
2	5	2010	4,142	4,043	4,003	4,018	4,034	4,251	4,562	4,763	4,810	4,866	4,818	4,913
2	5	2010	4,866	4,838	4,848	4,811	4,853	4,866	4,890	4,955	4,822	4,686	4,507	4,402
2	6	2010	4,178	4,162	4,105	4,141	4,108	4,247	4,357	4,483	4,597	4,669	4,689	4,675
2	6	2010	4,587	4,513	4,387	4,333	4,311	4,470	4,697	4,742	4,703	4,621	4,549	4,378
2	7	2010	4,306	4,305	4,312	4,322	4,336	4,457	4,589	4,659	4,762	4,657	4,565	4,560
2	7	2010	4,440	4,441	4,312	4,307	4,302	4,418	4,485	4,563	4,590	4,530	4,553	4,433
2	8	2010	4,359	4,333	4,331	4,394	4,449	4,705	5,037	5,304	5,302	5,223	5,141	4,969
2	8	2010	4,837	4,824	4,719	4,719	4,760	4,837	5,040	5,028	5,040	4,907	4,683	4,480
2	9	2010	4,400	4,302	4,309	4,311	4,406	4,579	4,827	4,960	4,994	4,970	4,929	4,901
2	9	2010	4,893	4,870	4,851	4,867	4,912	5,060	5,319	5,366	5,375	5,221	5,058	4,922
2	10	2010	4,751	4,718	4,645	4,616	4,631	4,797	5,032	5,110	5,109	5,126	5,134	5,046
2	10	2010	4,982	4,969	4,883	4,879	4,876	4,999	5,177	5,284	5,202	5,068	4,820	4,680
2	11	2010	4,570	4,515	4,431	4,431	4,508	4,704	5,024	5,248	5,247	5,184	5,050	4,915
2	11	2010	4,834	4,824	4,714	4,634	4,588	4,644	4,960	5,071	5,110	5,042	4,862	4,738
2	12	2010	4,670	4,593	4,612	4,619	4,682	4,961	5,337	5,545	5,578	5,417	5,207	5,015
2	12	2010	4,847	4,724	4,655	4,559	4,528	4,628	4,752	4,893	4,877	4,779	4,674	4,511
2	13	2010	4,402	4,393	4,386	4,358	4,380	4,478	4,582	4,755	4,882	4,841	4,733	4,605
2	13	2010	4,478	4,371	4,267	4,225	4,258	4,327	4,551	4,734	4,607	4,635	4,532	4,397
2	14	2010	4,378	4,342	4,338	4,398	4,409	4,474	4,617	4,682	4,695	4,692	4,564	4,418
2	14	2010	4,425	4,326	4,263	4,164	4,234	4,358	4,559	4,667	4,647	4,565	4,441	4,296
2	15	2010	4,239	4,216	4,227	4,224	4,313	4,491	4,725	4,953	4,969	5,070	5,071	5,018
2	15	2010	4,948	4,995	4,953	4,893	4,931	4,970	5,097	5,253	5,188	4,994	4,810	4,648
2	16	2010	4,459	4,465	4,405	4,364	4,435	4,670	4,907	5,085	5,134	5,154	5,175	5,122
2	16	2010	5,049	5,042	5,036	5,012	4,970	5,038	5,158	5,233	5,109	4,949	4,786	4,527
2	17	2010	4,314	4,342	4,258	4,325	4,387	4,631	4,863	5,006	4,989	4,974	4,930	4,795
2	17	2010	4,768	4,688	4,653	4,638	4,699	4,727	4,909	5,025	4,983	4,826	4,663	4,457
2	18	2010	4,334	4,215	4,187	4,243	4,369	4,519	4,863	5,059	4,962	4,958	4,987	4,927
2	18	2010	4,807	4,811	4,752	4,604	4,571	4,605	4,809	4,896	4,944	4,872	4,681	4,505
2	19	2010	4,428	4,321	4,372	4,362	4,494	4,696	5,051	5,283	5,133	5,053	4,935	4,786
2	19	2010	4,626	4,593	4,444	4,336	4,253	4,337	4,502	4,637	4,576	4,583	4,405	4,235
2	20	2010	4,088	4,015	3,957	3,863	3,931	4,058	4,207	4,325	4,394	4,420	4,500	4,397
2	20	2010	4,324	4,196	4,110	4,054	4,052	4,124	4,199	4,267	4,277	4,152	4,012	3,887
2	21	2010	3,804	3,675	3,718	3,682	3,677	3,722	3,833	3,950	4,017	4,035	4,070	4,124
2	21	2010	4,107	4,067	3,982	3,952	3,966	4,071	4,204	4,314	4,272	4,194	4,032	3,935
2	22	2010	3,864	3,811	3,715	3,790	3,894	3,998	4,325	4,672	4,659	4,663	4,677	4,576
2	22	2010	4,565	4,696	4,656	4,572	4,588	4,655	4,791	4,777	4,799	4,630	4,418	4,217
2	23	2010	4,116	4,001	3,969	3,949	4,023	4,307	4,650	4,857	4,806	4,820	4,854	4,835
2	23	2010	4,762	4,789	4,770	4,752	4,698	4,779	4,841	4,944	4,901	4,765	4,527	4,410
2	24	2010	4,229	4,206	4,171	4,163	4,251	4,436	4,732	4,933	4,887	4,882	4,839	4,790
2	24	2010	4,753	4,740	4,699	4,702	4,689	4,864	5,062	5,146	5,125	4,997	4,671	4,481
2	25	2010	4,413	4,303	4,333	4,350	4,442	4,652	4,912	5,148	5,050	5,047	4,946	4,847
2	25	2010	4,806	4,765	4,733	4,618	4,687	4,766	4,808	5,027	5,042	4,883	4,660	4,397
2	26	2010	4,372	4,376	4,368	4,391	4,410	4,623	4,957	5,133	5,125	4,961	4,922	4,832
2	26	2010	4,805	4,727	4,692	4,566	4,535	4,632	4,700	4,790	4,735	4,623	4,515	4,338
2	27	2010	4,233	4,101	4,007	4,074	4,098	4,165	4,315	4,360	4,529	4,620	4,569	4,474
2	27	2010	4,409	4,367	4,295	4,285	4,256	4,433	4,527	4,603	4,556	4,464	4,276	4,148
2	28	2010	3,990	3,933	3,922	3,900	3,911	3,919	4,015	4,103	4,204	4,197	4,204	4,273
2	28	2010	4,197	4,162	4,150	4,172	4,129	4,267	4,385	4,483	4,472	4,327	4,164	3,981

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
3	1	2010	3,940	3,898	3,837	3,888	3,995	4,121	4,542	4,787	4,762	4,806	4,766	4,748
3	1	2010	4,702	4,658	4,543	4,541	4,495	4,519	4,695	4,723	4,674	4,511	4,396	4,227
3	2	2010	4,089	4,069	3,988	4,049	4,172	4,373	4,761	5,012	4,948	4,967	4,870	4,771
3	2	2010	4,752	4,668	4,565	4,426	4,496	4,552	4,683	4,800	4,827	4,704	4,518	4,336
3	3	2010	4,208	4,186	4,158	4,161	4,245	4,351	4,671	4,909	4,913	4,885	4,894	4,718
3	3	2010	4,660	4,690	4,659	4,644	4,604	4,678	4,750	4,760	4,789	4,721	4,529	4,350
3	4	2010	4,276	4,232	4,235	4,226	4,325	4,534	4,932	5,003	4,909	4,689	4,642	4,583
3	4	2010	4,465	4,330	4,228	4,195	4,159	4,218	4,378	4,667	4,660	4,628	4,457	4,299
3	5	2010	4,181	4,158	4,143	4,147	4,266	4,520	4,866	5,002	4,928	4,783	4,705	4,523
3	5	2010	4,466	4,406	4,320	4,202	4,126	4,128	4,187	4,370	4,421	4,265	4,174	4,030
3	6	2010	4,023	3,906	3,933	3,930	3,975	4,098	4,271	4,385	4,401	4,327	4,312	4,181
3	6	2010	4,034	3,923	3,799	3,753	3,685	3,751	3,807	4,041	4,078	4,091	3,961	3,910
3	7	2010	3,789	3,800	3,715	3,690	3,715	3,853	4,054	4,138	4,213	4,198	4,072	3,971
3	7	2010	3,937	3,841	3,724	3,746	3,868	3,906	3,993	4,194	4,119	4,033	3,877	3,702
3	8	2010	3,612	3,602	3,576	3,613	3,715	3,972	4,272	4,546	4,552	4,522	4,492	4,409
3	8	2010	4,332	4,316	4,199	4,113	3,994	4,032	4,071	4,269	4,281	4,200	4,014	3,805
3	9	2010	3,726	3,694	3,670	3,687	3,794	4,005	4,407	4,579	4,498	4,431	4,393	4,334
3	9	2010	4,288	4,194	4,218	4,177	4,073	4,114	4,242	4,379	4,346	4,189	3,950	3,751
3	10	2010	3,637	3,531	3,495	3,487	3,552	3,749	4,143	4,270	4,250	4,230	4,220	4,134
3	10	2010	4,133	4,167	4,156	4,127	4,025	4,007	4,078	4,251	4,219	4,068	3,859	3,693
3	11	2010	3,539	3,437	3,386	3,392	3,446	3,652	3,983	4,236	4,305	4,326	4,323	4,257
3	11	2010	4,263	4,243	4,198	4,169	4,142	4,163	4,209	4,329	4,254	4,141	3,915	3,600
3	12	2010	3,514	3,469	3,419	3,410	3,502	3,716	4,070	4,249	4,262	4,286	4,251	4,299
3	12	2010	4,274	4,235	4,143	4,095	4,090	4,075	4,118	4,154	4,113	4,027	3,884	3,700
3	13	2010	3,508	3,395	3,361	3,282	3,356	3,433	3,563	3,659	3,777	3,959	4,053	4,028
3	13	2010	4,027	3,980	3,976	3,968	3,917	3,989	4,020	4,016	4,068	3,931	3,791	3,680
3	14	2010	3,578	3,496	3,449	3,417	3,480	3,552	3,705	3,808	3,848	3,912	3,974	4,010
3	14	2010	4,035	3,999	3,976	4,011	4,012	4,040	4,093	4,164	4,146	3,955	3,799	3,731
3	15	2010	3,596	3,551	3,519	3,637	3,847	4,200	4,502	4,454	4,499	4,543	4,470	4,474
3	15	2010	4,527	4,424	4,266	4,351	4,374	4,367	4,321	4,464	4,309	4,094	3,903	3,832
3	16	2010	3,714	3,663	3,697	3,754	3,974	4,273	4,559	4,492	4,476	4,465	4,352	4,319
3	16	2010	4,184	4,165	4,057	3,985	3,984	3,990	4,034	4,210	4,180	3,988	3,746	3,644
3	17	2010	3,548	3,579	3,582	3,694	3,880	4,282	4,482	4,380	4,320	4,259	4,122	4,087
3	17	2010	4,047	3,988	3,977	3,918	3,945	3,935	3,986	4,198	4,103	3,905	3,756	3,585
3	18	2010	3,539	3,524	3,475	3,644	3,894	4,211	4,459	4,439	4,425	4,361	4,295	4,257
3	18	2010	4,202	4,134	4,041	3,953	3,957	3,920	3,953	4,145	4,087	3,905	3,685	3,598
3	19	2010	3,462	3,387	3,465	3,561	3,770	4,111	4,371	4,338	4,289	4,250	4,202	4,137
3	19	2010	4,132	4,062	3,980	3,900	3,862	3,803	3,798	3,975	3,894	3,716	3,487	3,332
3	20	2010	3,309	3,288	3,243	3,269	3,402	3,581	3,742	3,822	3,873	3,899	3,883	3,772
3	20	2010	3,722	3,641	3,582	3,518	3,553	3,573	3,675	3,759	3,681	3,550	3,440	3,306
3	21	2010	3,203	3,168	3,161	3,203	3,262	3,330	3,496	3,663	3,717	3,798	3,818	3,755
3	21	2010	3,705	3,695	3,711	3,712	3,785	3,830	3,853	4,029	3,864	3,769	3,597	3,515
3	22	2010	3,450	3,469	3,519	3,574	3,763	4,091	4,334	4,419	4,447	4,488	4,403	4,432
3	22	2010	4,439	4,399	4,362	4,369	4,382	4,379	4,389	4,466	4,375	4,135	3,967	3,842
3	23	2010	3,718	3,683	3,642	3,775	3,962	4,326	4,495	4,516	4,474	4,424	4,361	4,272
3	23	2010	4,185	4,107	4,026	3,908	3,902	3,908	3,932	4,141	4,086	3,917	3,774	3,615
3	24	2010	3,504	3,491	3,512	3,553	3,792	4,113	4,286	4,280	4,221	4,238	4,180	4,131
3	24	2010	4,098	4,007	3,947	3,865	3,881	3,888	3,934	4,148	4,099	3,894	3,661	3,505
3	25	2010	3,455	3,420	3,410	3,435	3,590	3,945	4,203	4,203	4,232	4,282	4,278	4,314
3	25	2010	4,336	4,306	4,292	4,281	4,292	4,366	4,393	4,473	4,392	4,214	4,032	3,876
3	26	2010	3,808	3,777	3,748	3,877	4,072	4,421	4,669	4,645	4,591	4,544	4,430	4,451
3	26	2010	4,379	4,274	4,133	4,024	3,980	3,931	3,968	4,132	4,104	3,991	3,917	3,828
3	27	2010	3,737	3,702	3,642	3,731	3,817	3,889	4,051	4,174	4,223	4,106	4,026	3,927
3	27	2010	3,833	3,674	3,615	3,588	3,579	3,608	3,633	3,834	3,814	3,624	3,488	3,350
3	28	2010	3,187	3,141	3,103	3,127	3,175	3,324	3,513	3,659	3,729	3,762	3,754	3,858
3	28	2010	3,852	3,772	3,684	3,629	3,756	3,856	3,933	3,989	3,969	3,844	3,721	3,561
3	29	2010	3,492	3,554	3,553	3,629	3,830	4,251	4,455	4,493	4,523	4,479	4,425	4,429
3	29	2010	4,326	4,270	4,145	4,012	3,984	4,012	4,064	4,235	4,195	4,029	3,818	3,661
3	30	2010	3,673	3,652	3,640	3,745	3,945	4,297	4,477	4,469	4,446	4,403	4,291	4,265
3	30	2010	4,207	4,114	4,047	3,938	3,881	3,869	3,913	4,094	4,070	3,828	3,648	3,474
3	31	2010	3,461	3,425	3,308	3,437	3,616	3,999	4,228	4,197	4,145	4,109	4,062	4,032
3	31	2010	3,973	3,980	3,914	3,862	3,841	3,807	3,790	3,994	3,951	3,736	3,496	3,298

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
4	1	2010	3,156	3,127	3,132	3,156	3,324	3,655	3,995	4,016	4,066	3,963	4,088	4,164
4	1	2010	4,157	4,115	4,114	4,081	4,045	4,028	4,019	4,115	4,130	3,861	3,571	3,376
4	2	2010	3,258	3,142	3,122	3,070	3,224	3,408	3,588	3,662	3,828	3,871	3,883	3,901
4	2	2010	3,919	3,923	3,883	3,886	3,829	3,767	3,695	3,809	3,798	3,645	3,464	3,278
4	3	2010	3,176	3,088	2,942	3,001	3,029	3,102	3,256	3,394	3,551	3,641	3,637	3,657
4	3	2010	3,585	3,595	3,585	3,540	3,537	3,460	3,476	3,634	3,635	3,447	3,309	3,239
4	4	2010	3,096	3,069	3,020	3,026	3,075	3,199	3,325	3,458	3,495	3,521	3,525	3,417
4	4	2010	3,386	3,360	3,383	3,329	3,354	3,385	3,464	3,641	3,673	3,578	3,410	3,292
4	5	2010	3,228	3,206	3,175	3,163	3,280	3,674	4,008	4,065	4,129	4,207	4,308	4,363
4	5	2010	4,404	4,379	4,321	4,206	4,271	4,286	4,256	4,320	4,216	4,058	3,819	3,638
4	6	2010	3,518	3,418	3,352	3,370	3,463	3,817	4,034	4,078	4,181	4,280	4,348	4,369
4	6	2010	4,441	4,379	4,429	4,396	4,339	4,319	4,256	4,354	4,322	4,010	3,791	3,626
4	7	2010	3,506	3,415	3,402	3,416	3,511	3,854	3,983	4,046	4,070	4,166	4,150	4,198
4	7	2010	4,159	4,164	4,070	4,103	4,150	4,086	4,083	4,177	4,146	3,859	3,663	3,462
4	8	2010	3,327	3,253	3,243	3,281	3,435	3,755	3,970	4,045	4,119	4,202	4,212	4,135
4	8	2010	4,164	4,134	4,076	3,956	4,020	4,051	4,006	4,168	4,161	3,986	3,762	3,637
4	9	2010	3,565	3,453	3,472	3,578	3,758	4,047	4,328	4,322	4,241	4,259	4,182	4,219
4	9	2010	4,153	4,108	4,002	3,904	3,850	3,838	3,809	3,883	3,907	3,807	3,657	3,515
4	10	2010	3,448	3,410	3,350	3,424	3,464	3,678	3,749	3,786	3,895	3,854	3,795	3,765
4	10	2010	3,673	3,662	3,537	3,616	3,640	3,613	3,559	3,606	3,660	3,549	3,411	3,277
4	11	2010	3,202	3,136	3,138	3,135	3,195	3,267	3,341	3,438	3,500	3,575	3,558	3,604
4	11	2010	3,647	3,561	3,600	3,628	3,738	3,712	3,772	3,851	3,890	3,716	3,462	3,249
4	12	2010	3,210	3,182	3,216	3,240	3,421	3,824	4,079	4,132	4,168	4,219	4,227	4,252
4	12	2010	4,307	4,291	4,226	4,141	4,054	4,065	4,080	4,158	4,087	3,839	3,612	3,422
4	13	2010	3,349	3,305	3,286	3,346	3,491	3,815	4,041	4,025	4,083	4,149	4,183	4,224
4	13	2010	4,248	4,294	4,278	4,209	4,183	4,089	4,175	4,233	4,201	3,953	3,687	3,504
4	14	2010	3,378	3,267	3,260	3,257	3,363	3,772	3,906	3,911	3,996	4,037	4,093	4,114
4	14	2010	4,179	4,209	4,239	4,259	4,242	4,321	4,281	4,325	4,327	4,043	3,726	3,538
4	15	2010	3,393	3,293	3,275	3,289	3,399	3,756	3,973	4,075	4,138	4,255	4,335	4,364
4	15	2010	4,515	4,518	4,425	4,418	4,389	4,315	4,289	4,338	4,286	3,984	3,708	3,537
4	16	2010	3,412	3,284	3,265	3,357	3,518	3,825	4,042	4,080	4,148	4,252	4,328	4,239
4	16	2010	4,340	4,296	4,203	4,125	4,030	3,954	3,869	3,933	3,941	3,735	3,508	3,292
4	17	2010	3,216	3,140	3,134	3,101	3,200	3,314	3,451	3,585	3,676	3,732	3,715	3,662
4	17	2010	3,628	3,612	3,600	3,607	3,585	3,564	3,573	3,648	3,682	3,605	3,353	3,289
4	18	2010	3,236	3,164	3,149	3,193	3,194	3,272	3,433	3,553	3,600	3,563	3,540	3,523
4	18	2010	3,566	3,521	3,527	3,509	3,540	3,562	3,584	3,764	3,876	3,623	3,491	3,390
4	19	2010	3,344	3,290	3,355	3,407	3,577	4,009	4,166	4,187	4,235	4,265	4,217	4,217
4	19	2010	4,250	4,176	4,135	4,020	3,941	3,973	3,974	4,137	4,090	3,801	3,611	3,510
4	20	2010	3,396	3,349	3,359	3,427	3,610	3,929	4,119	4,191	4,195	4,205	4,140	4,157
4	20	2010	4,135	4,134	4,050	4,035	3,981	3,945	3,903	4,074	4,084	3,895	3,625	3,494
4	21	2010	3,377	3,336	3,318	3,400	3,518	3,939	4,098	4,064	4,077	4,064	4,086	4,087
4	21	2010	4,070	4,046	4,022	4,069	4,024	4,032	4,012	4,126	4,134	3,876	3,635	3,438
4	22	2010	3,385	3,322	3,324	3,370	3,526	3,926	4,120	4,159	4,157	4,232	4,229	4,223
4	22	2010	4,211	4,215	4,183	4,151	4,065	4,041	4,025	4,091	4,112	3,856	3,628	3,462
4	23	2010	3,329	3,344	3,311	3,261	3,509	3,785	3,998	4,083	4,172	4,126	4,153	4,172
4	23	2010	4,167	4,080	4,032	4,030	3,972	3,908	3,887	3,933	3,960	3,745	3,570	3,363
4	24	2010	3,315	3,184	3,209	3,209	3,278	3,350	3,493	3,609	3,729	3,828	3,844	3,811
4	24	2010	3,799	3,783	3,748	3,787	3,796	3,752	3,777	3,773	3,738	3,547	3,399	3,270
4	25	2010	3,152	3,064	3,090	3,073	3,057	3,162	3,183	3,332	3,482	3,563	3,640	3,603
4	25	2010	3,632	3,671	3,600	3,664	3,678	3,734	3,762	3,824	3,829	3,638	3,474	3,366
4	26	2010	3,257	3,229	3,196	3,323	3,518	3,871	4,132	4,194	4,244	4,296	4,180	4,229
4	26	2010	4,208	4,149	4,100	4,025	4,048	4,048	4,043	4,118	4,127	3,864	3,665	3,528
4	27	2010	3,413	3,415	3,411	3,453	3,674	3,996	4,212	4,219	4,288	4,310	4,271	4,299
4	27	2010	4,235	4,195	4,174	4,069	4,036	4,002	3,916	4,034	4,122	4,002	3,754	3,596
4	28	2010	3,518	3,512	3,530	3,546	3,659	4,027	4,222	4,216	4,172	4,166	4,097	4,087
4	28	2010	4,069	4,027	3,943	3,889	3,898	3,913	3,892	3,958	3,988	3,847	3,608	3,455
4	29	2010	3,431	3,383	3,399	3,465	3,668	4,007	4,237	4,254	4,263	4,214	4,262	4,284
4	29	2010	4,282	4,236	4,188	4,146	4,086	4,097	4,085	4,115	4,226	4,026	3,745	3,521
4	30	2010	3,402	3,290	3,335	3,365	3,519	3,815	3,996	4,103	4,178	4,246	4,323	4,320
4	30	2010	4,303	4,302	4,339	4,226	4,247	4,192	4,136	4,150	4,184	4,034	3,807	3,613

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
5	1	2010	3,443	3,391	3,318	3,271	3,240	3,380	3,428	3,597	3,763	3,862	3,905	3,892
5	1	2010	3,813	3,795	3,805	3,817	3,812	3,787	3,786	3,754	3,818	3,698	3,496	3,346
5	2	2010	3,219	3,179	3,161	3,105	3,102	3,182	3,290	3,434	3,517	3,632	3,765	3,840
5	2	2010	3,798	3,873	3,855	3,923	3,952	3,952	3,969	3,986	4,023	3,832	3,614	3,391
5	3	2010	3,263	3,276	3,224	3,283	3,447	3,782	4,000	4,157	4,258	4,372	4,413	4,473
5	3	2010	4,540	4,571	4,543	4,534	4,505	4,409	4,379	4,319	4,315	4,062	3,756	3,589
5	4	2010	3,446	3,355	3,304	3,374	3,533	3,856	4,074	4,194	4,214	4,323	4,378	4,426
5	4	2010	4,473	4,507	4,482	4,458	4,436	4,387	4,390	4,384	4,346	4,132	3,840	3,625
5	5	2010	3,484	3,384	3,355	3,371	3,517	3,790	3,914	3,962	4,080	4,198	4,268	4,420
5	5	2010	4,476	4,570	4,581	4,595	4,582	4,538	4,497	4,526	4,463	4,239	3,934	3,676
5	6	2010	3,524	3,450	3,362	3,404	3,496	3,804	4,000	4,100	4,209	4,220	4,205	4,298
5	6	2010	4,339	4,353	4,313	4,325	4,293	4,337	4,294	4,250	4,308	4,068	3,789	3,531
5	7	2010	3,403	3,308	3,348	3,384	3,534	3,847	4,054	4,124	4,215	4,294	4,410	4,574
5	7	2010	4,617	4,619	4,622	4,558	4,465	4,385	4,349	4,290	4,196	3,979	3,693	3,442
5	8	2010	3,339	3,258	3,188	3,168	3,245	3,341	3,409	3,603	3,709	3,832	3,830	3,794
5	8	2010	3,734	3,751	3,668	3,638	3,695	3,689	3,693	3,727	3,789	3,679	3,495	3,333
5	9	2010	3,217	3,259	3,174	3,246	3,281	3,341	3,435	3,551	3,645	3,625	3,622	3,581
5	9	2010	3,530	3,488	3,385	3,484	3,489	3,498	3,522	3,625	3,736	3,652	3,507	3,369
5	10	2010	3,333	3,287	3,304	3,365	3,587	3,932	4,151	4,190	4,182	4,279	4,257	4,287
5	10	2010	4,243	4,231	4,150	4,053	4,034	4,063	4,064	4,157	4,177	3,927	3,681	3,512
5	11	2010	3,421	3,369	3,362	3,401	3,553	3,949	4,107	4,244	4,279	4,350	4,341	4,407
5	11	2010	4,442	4,432	4,343	4,296	4,290	4,271	4,232	4,250	4,215	4,057	3,787	3,581
5	12	2010	3,434	3,339	3,312	3,399	3,535	3,856	4,004	4,110	4,123	4,203	4,209	4,221
5	12	2010	4,255	4,228	4,239	4,203	4,252	4,279	4,261	4,246	4,277	4,103	3,831	3,622
5	13	2010	3,524	3,436	3,375	3,428	3,574	3,959	4,175	4,309	4,382	4,541	4,659	4,752
5	13	2010	4,768	4,801	4,741	4,724	4,695	4,641	4,608	4,646	4,641	4,322	4,102	3,858
5	14	2010	3,714	3,580	3,447	3,508	3,607	3,943	4,136	4,209	4,313	4,408	4,405	4,356
5	14	2010	4,487	4,393	4,444	4,423	4,371	4,282	4,137	4,067	4,104	3,975	3,708	3,490
5	15	2010	3,361	3,275	3,220	3,210	3,229	3,317	3,411	3,525	3,732	3,800	3,823	3,796
5	15	2010	3,826	3,820	3,786	3,738	3,788	3,747	3,722	3,698	3,733	3,633	3,411	3,241
5	16	2010	3,139	3,076	3,049	3,063	3,087	3,069	3,183	3,353	3,508	3,577	3,575	3,655
5	16	2010	3,677	3,683	3,667	3,682	3,709	3,772	3,720	3,796	3,763	3,611	3,471	3,349
5	17	2010	3,208	3,192	3,200	3,250	3,427	3,801	4,046	4,156	4,279	4,333	4,298	4,359
5	17	2010	4,377	4,313	4,238	4,201	4,200	4,180	4,179	4,239	4,128	3,964	3,661	3,518
5	18	2010	3,374	3,339	3,365	3,370	3,581	3,901	4,066	4,103	4,118	4,289	4,284	4,288
5	18	2010	4,277	4,261	4,171	4,160	4,097	4,116	4,126	4,151	4,169	3,911	3,684	3,562
5	19	2010	3,462	3,404	3,382	3,433	3,522	3,782	3,941	4,009	4,084	4,131	4,138	4,200
5	19	2010	4,168	4,145	4,086	4,051	4,015	3,974	3,919	3,971	4,015	3,819	3,569	3,373
5	20	2010	3,272	3,216	3,233	3,262	3,559	3,853	4,089	4,219	4,235	4,304	4,386	4,423
5	20	2010	4,398	4,351	4,305	4,237	4,187	4,158	4,152	4,199	4,221	4,015	3,794	3,622
5	21	2010	3,427	3,360	3,312	3,396	3,566	3,871	4,075	4,190	4,291	4,331	4,412	4,325
5	21	2010	4,437	4,346	4,321	4,239	4,193	4,174	4,095	4,073	4,110	3,984	3,688	3,550
5	22	2010	3,350	3,303	3,177	3,216	3,282	3,361	3,484	3,664	3,803	3,929	3,965	3,992
5	22	2010	3,945	4,003	4,049	4,082	4,122	4,135	4,073	4,037	4,045	3,889	3,661	3,389
5	23	2010	3,240	3,186	3,193	3,133	3,132	3,158	3,223	3,455	3,638	3,851	4,028	4,254
5	23	2010	4,357	4,527	4,625	4,695	4,753	4,784	4,753	4,739	4,812	4,560	4,251	4,041
5	24	2010	3,801	3,646	3,611	3,667	3,773	4,072	4,375	4,549	4,810	4,980	5,225	5,392
5	24	2010	5,571	5,576	5,604	5,631	5,560	5,531	5,410	5,236	5,119	4,914	4,432	4,104
5	25	2010	3,897	3,790	3,622	3,630	3,737	4,065	4,288	4,538	4,747	4,972	5,106	5,223
5	25	2010	5,303	5,435	5,508	5,476	5,499	5,443	5,373	5,219	5,128	4,821	4,488	4,168
5	26	2010	3,961	3,795	3,671	3,660	3,785	4,121	4,370	4,656	4,803	5,060	5,198	5,346
5	26	2010	5,524	5,609	5,654	5,688	5,624	5,629	5,382	5,360	5,211	4,888	4,533	4,174
5	27	2010	3,966	3,766	3,708	3,672	3,803	4,051	4,324	4,521	4,740	4,994	5,259	5,443
5	27	2010	5,525	5,487	5,450	5,346	5,228	5,069	4,893	4,826	4,757	4,517	4,153	3,873
5	28	2010	3,664	3,540	3,479	3,446	3,577	3,809	4,031	4,206	4,425	4,594	4,785	4,921
5	28	2010	5,064	5,191	5,247	5,294	5,186	5,165	5,001	4,838	4,779	4,534	4,189	3,893
5	29	2010	3,598	3,497	3,380	3,338	3,332	3,317	3,447	3,689	3,966	4,286	4,469	4,632
5	29	2010	4,771	4,848	4,934	4,973	4,982	4,947	4,879	4,685	4,596	4,407	4,074	3,781
5	30	2010	3,534	3,424	3,344	3,279	3,186	3,178	3,277	3,491	3,771	4,029	4,289	4,502
5	30	2010	4,640	4,702	4,796	4,843	4,864	4,826	4,725	4,587	4,530	4,357	4,057	3,760
5	31	2010	3,559	3,426	3,330	3,308	3,317	3,353	3,430	3,588	3,877	4,178	4,447	4,599
5	31	2010	4,675	4,665	4,678	4,674	4,581	4,421	4,303	4,207	4,180	4,008	3,739	3,507

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
6	1	2010	3,362	3,311	3,279	3,328	3,455	3,761	4,016	4,210	4,369	4,631	4,836	5,039
6	1	2010	5,149	5,321	5,382	5,476	5,451	5,369	5,325	5,201	5,095	4,876	4,510	4,193
6	2	2010	3,977	3,851	3,736	3,749	3,899	4,177	4,363	4,451	4,551	4,689	4,882	5,072
6	2	2010	5,238	5,349	5,363	5,309	5,344	5,192	5,027	4,931	4,926	4,693	4,391	4,118
6	3	2010	3,883	3,782	3,713	3,751	3,858	4,091	4,244	4,375	4,548	4,787	5,005	5,147
6	3	2010	5,292	5,354	5,353	5,324	5,233	5,208	5,026	4,967	4,870	4,708	4,395	4,101
6	4	2010	3,881	3,737	3,665	3,671	3,795	3,941	4,197	4,438	4,691	4,967	5,187	5,319
6	4	2010	5,414	5,545	5,534	5,536	5,563	5,457	5,267	5,162	5,097	4,821	4,583	4,300
6	5	2010	4,105	3,871	3,850	3,803	3,835	3,880	3,953	4,181	4,383	4,546	4,685	4,803
6	5	2010	4,854	4,919	4,968	5,013	4,994	4,962	4,877	4,837	4,775	4,630	4,354	4,116
6	6	2010	3,970	3,876	3,754	3,662	3,678	3,656	3,619	3,723	3,793	3,887	4,075	4,131
6	6	2010	4,192	4,224	4,266	4,273	4,416	4,372	4,307	4,241	4,170	4,076	3,812	3,623
6	7	2010	3,474	3,331	3,355	3,350	3,506	3,663	3,905	4,143	4,318	4,458	4,573	4,623
6	7	2010	4,713	4,820	4,823	4,776	4,770	4,744	4,642	4,532	4,469	4,325	4,009	3,798
6	8	2010	3,598	3,512	3,454	3,475	3,605	3,798	4,007	4,095	4,303	4,479	4,558	4,640
6	8	2010	4,770	4,759	4,723	4,635	4,603	4,533	4,504	4,475	4,488	4,329	4,065	3,811
6	9	2010	3,657	3,584	3,592	3,650	3,741	3,966	4,123	4,280	4,406	4,529	4,590	4,731
6	9	2010	4,829	4,931	4,965	5,035	5,128	5,102	4,984	4,856	4,751	4,544	4,183	3,916
6	10	2010	3,767	3,647	3,524	3,564	3,639	3,768	4,050	4,265	4,483	4,725	4,889	5,018
6	10	2010	5,152	5,261	5,307	5,346	5,344	5,301	5,153	5,019	4,981	4,750	4,437	4,158
6	11	2010	3,956	3,801	3,746	3,725	3,806	4,050	4,251	4,514	4,754	5,074	5,303	5,512
6	11	2010	5,594	5,640	5,491	5,408	5,339	5,242	5,101	4,931	4,935	4,719	4,419	4,157
6	12	2010	3,934	3,826	3,768	3,643	3,732	3,795	3,911	4,095	4,283	4,468	4,708	4,915
6	12	2010	5,033	5,224	5,325	5,363	5,438	5,397	5,250	5,016	4,791	4,549	4,246	3,970
6	13	2010	3,861	3,715	3,604	3,543	3,545	3,557	3,619	3,824	4,023	4,188	4,395	4,616
6	13	2010	4,794	4,902	5,082	5,213	5,154	5,143	5,057	4,863	4,710	4,488	4,207	3,987
6	14	2010	3,817	3,704	3,689	3,691	3,815	4,030	4,289	4,525	4,797	5,114	5,309	5,500
6	14	2010	5,685	5,747	5,729	5,708	5,635	5,593	5,418	5,273	5,071	4,763	4,448	4,207
6	15	2010	4,040	3,912	3,836	3,811	3,973	4,193	4,383	4,594	4,732	4,961	5,028	5,274
6	15	2010	5,529	5,623	5,698	5,716	5,658	5,509	5,251	5,028	4,855	4,567	4,321	4,114
6	16	2010	3,950	3,850	3,783	3,768	3,927	4,046	4,233	4,422	4,646	4,849	4,946	5,093
6	16	2010	5,207	5,261	5,380	5,404	5,419	5,372	5,238	5,023	4,966	4,767	4,368	4,042
6	17	2010	3,804	3,706	3,613	3,573	3,724	3,876	4,103	4,296	4,591	4,847	5,053	5,191
6	17	2010	5,359	5,419	5,447	5,503	5,564	5,490	5,387	5,206	5,090	4,876	4,506	4,188
6	18	2010	3,925	3,831	3,722	3,697	3,769	3,979	4,244	4,384	4,627	4,927	5,219	5,432
6	18	2010	5,655	5,727	5,753	5,884	5,908	5,821	5,648	5,391	5,092	4,854	4,536	4,235
6	19	2010	3,959	3,780	3,647	3,567	3,589	3,711	3,732	3,843	4,212	4,468	4,747	4,901
6	19	2010	4,982	5,098	5,205	5,247	5,243	5,136	5,125	4,919	4,765	4,623	4,284	3,992
6	20	2010	3,750	3,680	3,558	3,418	3,449	3,393	3,573	3,831	4,157	4,402	4,648	4,933
6	20	2010	5,013	5,206	5,318	5,389	5,441	5,430	5,386	5,252	5,085	5,050	4,732	4,416
6	21	2010	4,258	4,062	3,914	3,822	4,095	4,186	4,545	4,796	5,034	5,124	5,225	5,176
6	21	2010	5,349	5,436	5,545	5,594	5,608	5,637	5,595	5,397	5,300	5,126	4,731	4,483
6	22	2010	4,189	4,037	3,841	3,800	3,943	4,152	4,350	4,490	4,679	4,882	5,115	5,242
6	22	2010	5,431	5,575	5,563	5,589	5,557	5,563	5,465	5,392	5,256	5,043	4,656	4,405
6	23	2010	4,195	4,117	4,026	4,009	4,142	4,312	4,608	4,889	5,199	5,489	5,682	5,788
6	23	2010	5,904	5,944	5,945	5,966	5,960	5,943	5,804	5,728	5,630	5,329	4,912	4,602
6	24	2010	4,335	4,153	4,054	4,037	4,159	4,329	4,551	4,754	4,934	5,107	5,166	5,271
6	24	2010	5,394	5,473	5,472	5,476	5,423	5,390	5,256	5,119	5,007	4,768	4,417	4,117
6	25	2010	3,910	3,700	3,682	3,673	3,729	3,917	4,098	4,346	4,562	4,807	5,020	5,115
6	25	2010	5,303	5,369	5,398	5,474	5,445	5,403	5,287	5,060	4,962	4,696	4,356	4,154
6	26	2010	3,937	3,775	3,655	3,626	3,670	3,684	3,766	4,004	4,238	4,493	4,822	5,069
6	26	2010	5,272	5,364	5,458	5,578	5,643	5,617	5,505	5,332	5,198	5,009	4,662	4,409
6	27	2010	4,188	4,033	3,862	3,758	3,734	3,702	3,804	4,098	4,455	4,779	5,044	5,175
6	27	2010	5,268	5,304	5,338	5,394	5,438	5,366	5,211	5,068	4,950	4,724	4,479	4,203
6	28	2010	3,983	3,868	3,807	3,820	3,939	4,142	4,332	4,519	4,657	4,957	5,119	5,255
6	28	2010	5,361	5,462	5,457	5,484	5,477	5,369	5,233	5,051	4,881	4,674	4,328	4,032
6	29	2010	3,790	3,647	3,595	3,596	3,699	3,857	4,088	4,330	4,529	4,721	4,825	4,902
6	29	2010	4,981	5,027	5,020	5,034	5,001	4,890	4,770	4,600	4,501	4,313	3,997	3,704
6	30	2010	3,552	3,420	3,358	3,355	3,466	3,631	3,799	3,973	4,121	4,302	4,395	4,455
6	30	2010	4,579	4,633	4,654	4,685	4,692	4,671	4,581	4,454	4,333	4,177	3,889	3,613

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
7	1	2010	3,456	3,341	3,244	3,267	3,366	3,531	3,688	3,899	4,083	4,249	4,358	4,449
7	1	2010	4,551	4,611	4,628	4,653	4,675	4,642	4,589	4,433	4,323	4,144	3,841	3,594
7	2	2010	3,396	3,279	3,228	3,212	3,323	3,430	3,614	3,781	3,962	4,145	4,234	4,328
7	2	2010	4,407	4,493	4,509	4,603	4,610	4,564	4,446	4,343	4,162	4,019	3,678	3,446
7	3	2010	3,267	3,145	3,075	3,041	3,025	3,027	3,116	3,323	3,522	3,746	3,947	4,116
7	3	2010	4,289	4,420	4,530	4,653	4,718	4,752	4,706	4,545	4,410	4,217	3,989	3,752
7	4	2010	3,543	3,393	3,274	3,163	3,173	3,158	3,235	3,526	3,852	4,191	4,483	4,729
7	4	2010	4,890	4,997	5,051	5,088	5,130	5,059	4,949	4,775	4,638	4,475	4,316	4,103
7	5	2010	3,871	3,689	3,563	3,479	3,446	3,485	3,550	3,836	4,238	4,590	4,864	5,070
7	5	2010	5,202	5,283	5,364	5,445	5,421	5,382	5,381	5,132	4,987	4,819	4,517	4,292
7	6	2010	3,968	3,798	3,730	3,674	3,828	3,931	4,230	4,565	4,861	5,179	5,448	5,618
7	6	2010	5,829	5,928	5,935	5,964	6,024	5,989	5,853	5,685	5,552	5,206	4,897	4,559
7	7	2010	4,292	4,140	4,006	3,959	4,025	4,160	4,403	4,666	5,007	5,234	5,533	5,680
7	7	2010	5,857	5,911	5,931	5,917	5,911	5,900	5,775	5,770	5,667	5,400	5,057	4,675
7	8	2010	4,471	4,274	4,110	4,024	4,117	4,282	4,557	4,754	5,110	5,458	5,761	5,945
7	8	2010	6,071	6,033	5,856	5,618	5,443	5,308	5,225	5,166	5,129	4,939	4,636	4,386
7	9	2010	4,171	4,089	4,018	3,983	4,101	4,277	4,471	4,607	4,772	4,971	5,039	5,219
7	9	2010	5,301	5,362	5,377	5,466	5,407	5,306	5,158	5,080	4,974	4,781	4,437	4,123
7	10	2010	3,923	3,755	3,645	3,552	3,500	3,557	3,586	3,869	4,253	4,510	4,770	4,921
7	10	2010	5,050	5,135	5,159	5,166	5,218	5,180	5,113	4,933	4,792	4,580	4,280	4,018
7	11	2010	3,763	3,634	3,537	3,464	3,458	3,443	3,516	3,743	4,078	4,348	4,610	4,884
7	11	2010	4,996	5,121	5,170	5,196	5,123	5,144	4,934	4,888	4,871	4,696	4,442	4,195
7	12	2010	4,044	3,823	3,806	3,819	3,860	3,982	4,227	4,500	4,715	4,990	5,146	5,309
7	12	2010	5,463	5,589	5,691	5,605	5,715	5,668	5,574	5,414	5,336	5,028	4,683	4,398
7	13	2010	4,185	4,015	3,899	3,887	3,952	4,132	4,377	4,504	4,617	4,751	4,829	4,936
7	13	2010	5,009	5,077	5,076	5,185	5,235	5,270	5,220	5,100	5,005	4,795	4,452	4,172
7	14	2010	3,943	3,735	3,703	3,684	3,771	3,893	4,093	4,371	4,659	5,001	5,241	5,435
7	14	2010	5,610	5,735	5,788	5,839	5,837	5,774	5,669	5,517	5,410	5,169	4,811	4,432
7	15	2010	4,206	4,026	3,935	3,909	4,040	4,237	4,447	4,716	5,002	5,333	5,640	5,859
7	15	2010	5,987	6,022	5,972	5,831	5,681	5,485	5,261	5,242	5,144	4,946	4,600	4,305
7	16	2010	4,117	3,989	3,915	3,853	4,001	4,078	4,280	4,487	4,815	5,111	5,309	5,462
7	16	2010	5,556	5,720	5,769	5,800	5,764	5,701	5,538	5,383	5,266	5,008	4,709	4,350
7	17	2010	4,183	3,982	3,880	3,797	3,821	3,881	3,898	4,131	4,477	4,775	5,041	5,216
7	17	2010	5,347	5,419	5,509	5,537	5,507	5,415	5,237	5,076	4,981	4,677	4,402	4,089
7	18	2010	3,908	3,741	3,674	3,522	3,528	3,547	3,614	3,849	4,123	4,410	4,639	4,836
7	18	2010	4,926	5,010	4,997	4,970	5,013	4,928	4,869	4,800	4,659	4,564	4,272	4,051
7	19	2010	3,845	3,791	3,687	3,712	3,870	4,093	4,339	4,503	4,777	5,015	5,249	5,472
7	19	2010	5,676	5,797	5,855	5,788	5,552	5,362	5,214	5,148	5,031	4,723	4,451	4,216
7	20	2010	3,978	3,799	3,713	3,729	3,818	4,043	4,200	4,400	4,561	4,854	4,985	5,079
7	20	2010	5,210	5,192	5,275	5,314	5,317	5,269	5,172	5,048	5,000	4,783	4,566	4,230
7	21	2010	4,073	3,943	3,816	3,814	3,901	4,096	4,297	4,503	4,725	4,953	5,145	5,329
7	21	2010	5,493	5,593	5,693	5,680	5,671	5,652	5,527	5,393	5,269	5,100	4,736	4,419
7	22	2010	4,163	4,010	3,914	3,894	4,005	4,175	4,399	4,622	4,894	5,226	5,430	5,646
7	22	2010	5,745	5,775	5,810	5,795	5,740	5,739	5,640	5,535	5,474	5,205	4,911	4,649
7	23	2010	4,506	4,336	4,228	4,240	4,331	4,504	4,652	4,921	5,252	5,494	5,724	5,819
7	23	2010	6,008	6,054	6,014	6,077	6,020	5,980	5,834	5,733	5,693	5,373	5,078	4,771
7	24	2010	4,575	4,350	4,238	4,187	4,194	4,259	4,209	4,501	4,894	5,166	5,377	5,570
7	24	2010	5,699	5,770	5,858	5,906	5,915	5,888	5,741	5,528	5,399	5,129	4,785	4,594
7	25	2010	4,351	4,231	4,095	3,915	3,914	3,954	3,934	4,108	4,358	4,555	4,769	4,973
7	25	2010	5,111	5,217	5,300	5,382	5,467	5,444	5,337	5,171	5,096	4,845	4,498	4,285
7	26	2010	4,062	3,933	3,807	3,786	3,930	4,058	4,307	4,548	4,734	5,071	5,241	5,420
7	26	2010	5,600	5,671	5,707	5,723	5,712	5,676	5,518	5,291	5,219	4,917	4,588	4,325
7	27	2010	4,118	3,958	3,839	3,823	3,936	4,103	4,252	4,456	4,746	5,036	5,245	5,525
7	27	2010	5,692	5,817	5,813	5,802	5,838	5,767	5,679	5,515	5,438	5,200	4,865	4,568
7	28	2010	4,291	4,192	4,106	4,058	4,161	4,364	4,526	4,808	5,096	5,365	5,639	5,887
7	28	2010	6,025	6,046	6,025	5,983	5,925	5,803	5,665	5,487	5,378	5,073	4,748	4,489
7	29	2010	4,281	4,129	4,052	4,033	4,161	4,310	4,526	4,712	4,900	5,118	5,298	5,449
7	29	2010	5,573	5,643	5,670	5,658	5,616	5,540	5,331	5,153	5,060	4,775	4,403	4,152
7	30	2010	3,957	3,749	3,661	3,665	3,756	3,898	4,085	4,271	4,452	4,659	4,851	5,028
7	30	2010	5,142	5,159	5,185	5,194	5,120	4,993	4,848	4,718	4,646	4,496	4,222	4,012
7	31	2010	3,793	3,585	3,554	3,555	3,556	3,574	3,678	3,841	4,087	4,216	4,387	4,412
7	31	2010	4,511	4,487	4,580	4,575	4,569	4,558	4,508	4,400	4,434	4,289	4,027	3,818

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
8	1	2010	3,674	3,544	3,445	3,393	3,334	3,342	3,362	3,567	3,804	4,045	4,301	4,503
8	1	2010	4,631	4,737	4,825	4,909	4,978	4,988	4,875	4,767	4,724	4,518	4,226	3,975
8	2	2010	3,782	3,657	3,575	3,566	3,719	3,920	4,171	4,415	4,668	5,010	5,327	5,536
8	2	2010	5,702	5,808	5,891	5,900	5,871	5,818	5,693	5,576	5,463	5,166	4,835	4,521
8	3	2010	4,298	4,138	4,058	4,040	4,103	4,336	4,553	4,748	4,951	5,098	5,230	5,452
8	3	2010	5,641	5,768	5,929	6,061	6,170	6,179	6,055	5,967	5,860	5,683	5,328	5,086
8	4	2010	4,816	4,634	4,559	4,518	4,666	4,853	4,952	5,318	5,516	5,728	5,932	6,072
8	4	2010	6,161	6,252	6,277	6,313	6,374	6,301	6,158	5,959	5,715	5,502	5,107	4,861
8	5	2010	4,591	4,408	4,281	4,278	4,363	4,566	4,757	4,920	5,073	5,273	5,483	5,712
8	5	2010	5,822	5,876	5,937	5,970	5,966	5,871	5,709	5,536	5,470	5,102	4,782	4,389
8	6	2010	4,219	4,043	3,967	3,893	3,950	4,146	4,236	4,460	4,711	4,999	5,071	5,180
8	6	2010	5,335	5,422	5,404	5,325	5,362	5,319	5,090	4,942	4,861	4,581	4,282	4,001
8	7	2010	3,806	3,635	3,563	3,543	3,522	3,579	3,608	3,804	4,089	4,327	4,521	4,641
8	7	2010	4,798	4,900	5,048	5,136	5,143	5,128	4,994	4,813	4,724	4,485	4,168	3,950
8	8	2010	3,726	3,580	3,463	3,352	3,383	3,389	3,489	3,665	3,930	4,168	4,520	4,758
8	8	2010	4,889	5,021	5,145	5,197	5,283	5,283	5,181	5,091	4,971	4,715	4,423	4,179
8	9	2010	3,955	3,869	3,760	3,811	3,920	4,164	4,375	4,576	4,835	5,223	5,473	5,791
8	9	2010	6,050	6,223	6,271	6,320	6,282	6,267	6,106	6,008	5,905	5,553	5,211	4,903
8	10	2010	4,679	4,540	4,419	4,400	4,420	4,645	4,826	5,040	5,239	5,460	5,694	5,917
8	10	2010	6,004	6,116	6,154	6,206	6,213	6,197	6,057	6,011	5,986	5,591	5,323	5,024
8	11	2010	4,756	4,662	4,531	4,513	4,592	4,895	5,103	5,257	5,410	5,641	5,740	5,905
8	11	2010	6,081	6,098	6,116	6,117	6,064	5,999	5,910	5,873	5,777	5,439	5,004	4,771
8	12	2010	4,555	4,360	4,271	4,269	4,353	4,635	4,834	5,067	5,376	5,643	5,761	5,912
8	12	2010	6,072	6,159	6,153	6,133	6,086	6,003	5,912	5,889	5,754	5,469	5,106	4,773
8	13	2010	4,575	4,387	4,265	4,246	4,310	4,486	4,710	4,931	5,211	5,571	5,778	5,879
8	13	2010	6,022	6,117	6,138	6,172	6,106	6,016	5,814	5,791	5,691	5,361	5,020	4,729
8	14	2010	4,449	4,334	4,198	4,108	4,146	4,186	4,284	4,424	4,632	4,867	5,103	5,272
8	14	2010	5,404	5,525	5,643	5,652	5,681	5,597	5,488	5,363	5,273	4,957	4,699	4,452
8	15	2010	4,265	4,101	3,929	3,932	3,921	3,939	4,011	4,222	4,498	4,785	5,127	5,388
8	15	2010	5,534	5,673	5,726	5,846	5,883	5,761	5,645	5,484	5,407	5,006	4,664	4,395
8	16	2010	4,184	3,988	3,798	3,752	3,872	4,122	4,217	4,393	4,635	4,879	5,037	5,238
8	16	2010	5,364	5,475	5,476	5,532	5,630	5,500	5,384	5,224	5,044	4,666	4,310	4,031
8	17	2010	3,852	3,743	3,660	3,710	3,820	4,060	4,202	4,336	4,506	4,798	4,983	5,176
8	17	2010	5,307	5,418	5,460	5,516	5,411	5,335	5,185	5,108	5,005	4,660	4,345	4,115
8	18	2010	3,939	3,820	3,780	3,805	3,971	4,269	4,368	4,509	4,709	4,924	5,088	5,224
8	18	2010	5,406	5,527	5,576	5,644	5,636	5,665	5,547	5,365	5,206	4,895	4,535	4,247
8	19	2010	4,022	3,913	3,797	3,803	3,917	4,183	4,382	4,406	4,630	4,858	5,103	5,421
8	19	2010	5,683	5,769	5,840	5,893	5,980	5,901	5,679	5,618	5,455	5,049	4,651	4,415
8	20	2010	4,225	4,083	4,016	3,964	3,994	4,306	4,458	4,598	4,933	5,200	5,475	5,670
8	20	2010	5,850	5,921	6,013	6,059	5,999	5,782	5,595	5,482	5,324	5,067	4,718	4,404
8	21	2010	4,162	4,021	3,912	3,863	3,860	3,928	4,047	4,178	4,309	4,402	4,557	4,630
8	21	2010	4,733	4,832	4,933	5,065	5,062	5,042	4,928	4,853	4,850	4,596	4,282	4,053
8	22	2010	3,838	3,669	3,630	3,596	3,561	3,592	3,622	3,839	4,128	4,317	4,516	4,741
8	22	2010	4,916	5,084	5,189	5,323	5,410	5,368	5,215	5,099	5,036	4,685	4,238	3,998
8	23	2010	3,821	3,676	3,676	3,698	3,824	4,100	4,344	4,408	4,576	4,743	4,907	5,057
8	23	2010	5,289	5,396	5,473	5,457	5,502	5,422	5,279	5,212	5,067	4,760	4,367	4,077
8	24	2010	3,892	3,786	3,652	3,595	3,778	4,156	4,315	4,374	4,560	4,707	4,894	5,073
8	24	2010	5,168	5,206	5,275	5,265	5,123	5,135	5,000	4,910	4,854	4,527	4,176	3,956
8	25	2010	3,830	3,651	3,632	3,688	3,811	4,169	4,278	4,276	4,429	4,659	4,796	4,898
8	25	2010	5,009	5,170	5,289	5,331	5,242	5,227	5,121	4,976	4,784	4,491	4,115	3,839
8	26	2010	3,666	3,550	3,496	3,489	3,634	3,918	4,051	4,140	4,267	4,435	4,479	4,612
8	26	2010	4,729	4,825	4,890	4,862	4,925	4,908	4,779	4,659	4,601	4,253	3,990	3,679
8	27	2010	3,497	3,463	3,419	3,423	3,573	3,753	3,906	3,958	4,226	4,369	4,508	4,594
8	27	2010	4,664	4,769	4,812	4,882	4,888	4,856	4,612	4,497	4,476	4,232	3,953	3,715
8	28	2010	3,545	3,365	3,276	3,320	3,283	3,383	3,471	3,640	3,881	4,130	4,307	4,432
8	28	2010	4,615	4,717	4,861	4,995	5,095	5,088	4,949	4,856	4,701	4,413	4,183	3,926
8	29	2010	3,735	3,627	3,598	3,505	3,483	3,560	3,561	3,794	4,094	4,444	4,749	5,035
8	29	2010	5,282	5,385	5,441	5,492	5,542	5,524	5,369	5,328	5,167	4,838	4,563	4,261
8	30	2010	4,011	3,966	3,758	3,808	3,957	4,306	4,480	4,676	4,884	5,165	5,307	5,479
8	30	2010	5,592	5,704	5,735	5,737	5,732	5,721	5,573	5,491	5,357	4,984	4,643	4,342
8	31	2010	4,102	3,967	3,864	3,870	3,974	4,263	4,420	4,557	4,798	5,055	5,198	5,383
8	31	2010	5,612	5,800	5,843	5,907	5,890	5,808	5,672	5,597	5,430	5,043	4,656	4,344

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9	1	2010	4,144	3,966	3,858	3,850	3,995	4,258	4,447	4,601	4,805	5,064	5,270	5,446
9	1	2010	5,582	5,635	5,668	5,657	5,599	5,537	5,439	5,418	5,192	4,802	4,517	4,280
9	2	2010	4,044	3,945	3,869	3,889	4,060	4,320	4,517	4,690	4,888	5,123	5,267	5,375
9	2	2010	5,444	5,487	5,466	5,444	5,471	5,405	5,297	5,283	5,181	4,794	4,483	4,266
9	3	2010	4,090	3,991	3,885	3,865	4,002	4,300	4,529	4,592	4,648	4,799	4,834	4,913
9	3	2010	4,845	4,900	4,890	4,781	4,584	4,442	4,194	4,293	4,092	3,935	3,748	3,531
9	4	2010	3,413	3,230	3,217	3,201	3,238	3,280	3,296	3,435	3,592	3,731	3,691	3,792
9	4	2010	3,817	3,807	3,850	3,871	3,889	3,856	3,748	3,800	3,791	3,576	3,380	3,234
9	5	2010	3,107	3,046	3,012	3,060	3,083	3,090	3,117	3,247	3,385	3,498	3,548	3,653
9	5	2010	3,721	3,724	3,746	3,843	3,906	3,932	3,872	3,860	3,762	3,554	3,319	3,294
9	6	2010	3,213	3,070	3,092	3,065	3,081	3,144	3,180	3,280	3,467	3,657	3,863	3,966
9	6	2010	4,047	4,220	4,353	4,504	4,607	4,618	4,575	4,581	4,454	4,195	3,928	3,658
9	7	2010	3,504	3,459	3,410	3,434	3,580	3,974	4,233	4,350	4,507	4,743	4,954	5,138
9	7	2010	5,293	5,412	5,420	5,375	5,316	5,209	4,991	4,902	4,740	4,342	4,016	3,807
9	8	2010	3,695	3,599	3,504	3,454	3,644	4,307	3,973	4,038	4,185	4,264	4,342	4,477
9	8	2010	4,580	4,673	4,751	4,813	4,849	4,728	4,666	4,690	4,510	4,196	3,905	3,686
9	9	2010	3,535	3,470	3,426	3,419	3,577	3,936	4,058	4,106	4,234	4,300	4,320	4,408
9	9	2010	4,420	4,454	4,466	4,590	4,611	4,551	4,474	4,566	4,433	4,152	3,916	3,681
9	10	2010	3,578	3,496	3,348	3,443	3,585	3,923	4,019	4,087	4,220	4,332	4,388	4,414
9	10	2010	4,429	4,446	4,445	4,446	4,404	4,373	4,274	4,318	4,260	4,076	3,817	3,666
9	11	2010	3,488	3,429	3,375	3,358	3,395	3,523	3,595	3,681	3,772	3,867	3,948	4,001
9	11	2010	4,013	4,069	4,088	4,171	4,239	4,220	4,179	4,182	4,071	3,890	3,683	3,505
9	12	2010	3,289	3,247	3,150	3,179	3,180	3,211	3,233	3,394	3,571	3,741	3,850	4,007
9	12	2010	4,006	4,102	4,234	4,322	4,454	4,467	4,381	4,391	4,285	4,006	3,774	3,599
9	13	2010	3,488	3,369	3,267	3,320	3,567	3,905	4,055	4,198	4,338	4,564	4,687	4,827
9	13	2010	4,993	5,118	5,121	5,249	5,214	5,221	5,062	5,053	4,868	4,467	4,184	3,915
9	14	2010	3,749	3,574	3,573	3,507	3,563	3,875	4,145	4,151	4,281	4,460	4,519	4,661
9	14	2010	4,689	4,776	4,824	4,850	4,865	4,818	4,764	4,771	4,603	4,222	3,939	3,712
9	15	2010	3,516	3,412	3,348	3,363	3,608	3,850	4,076	4,200	4,262	4,421	4,548	4,733
9	15	2010	4,903	5,070	5,131	5,213	5,197	5,095	5,001	5,049	4,901	4,576	4,274	3,985
9	16	2010	3,851	3,707	3,650	3,653	3,799	4,141	4,398	4,418	4,501	4,622	4,739	4,871
9	16	2010	4,918	4,964	4,944	4,878	4,785	4,691	4,576	4,631	4,476	4,203	3,878	3,642
9	17	2010	3,495	3,458	3,358	3,395	3,540	3,801	4,024	4,085	4,178	4,234	4,360	4,418
9	17	2010	4,510	4,620	4,589	4,667	4,596	4,496	4,381	4,380	4,225	4,020	3,750	3,547
9	18	2010	3,402	3,359	3,325	3,250	3,294	3,420	3,468	3,584	3,766	3,946	4,078	4,187
9	18	2010	4,290	4,341	4,487	4,588	4,633	4,552	4,429	4,473	4,314	4,052	3,798	3,484
9	19	2010	3,440	3,326	3,322	3,272	3,263	3,315	3,383	3,480	3,589	3,725	3,880	4,098
9	19	2010	4,232	4,329	4,404	4,403	4,468	4,575	4,528	4,564	4,341	4,159	3,919	3,697
9	20	2010	3,614	3,520	3,464	3,476	3,663	4,068	4,210	4,303	4,453	4,625	4,851	4,974
9	20	2010	5,132	5,326	5,368	5,517	5,463	5,398	5,304	5,322	5,080	4,714	4,371	4,072
9	21	2010	3,889	3,752	3,669	3,634	3,792	4,136	4,387	4,445	4,707	4,900	5,176	5,394
9	21	2010	5,605	5,740	5,823	5,811	5,764	5,667	5,592	5,498	5,251	4,860	4,485	4,173
9	22	2010	3,954	3,872	3,813	3,779	3,954	4,217	4,476	4,573	4,687	4,913	5,067	5,166
9	22	2010	5,176	5,110	5,062	5,045	5,034	5,011	4,913	4,967	4,743	4,425	4,125	3,895
9	23	2010	3,712	3,641	3,582	3,603	3,740	4,104	4,288	4,351	4,564	4,798	5,050	5,313
9	23	2010	5,497	5,652	5,686	5,686	5,660	5,539	5,438	5,440	5,205	4,855	4,506	4,255
9	24	2010	4,053	3,952	3,818	3,864	3,977	4,312	4,622	4,656	4,846	5,073	5,162	5,197
9	24	2010	5,188	5,317	5,298	5,264	5,153	4,984	4,768	4,716	4,519	4,212	3,881	3,636
9	25	2010	3,446	3,352	3,268	3,229	3,227	3,355	3,476	3,534	3,681	3,742	3,842	3,883
9	25	2010	3,903	3,911	4,018	4,048	4,021	3,850	3,903	3,887	3,759	3,608	3,392	3,248
9	26	2010	3,098	3,072	3,020	2,956	3,052	3,047	3,138	3,239	3,397	3,453	3,542	3,534
9	26	2010	3,575	3,573	3,599	3,573	3,632	3,668	3,668	3,852	3,727	3,569	3,368	3,252
9	27	2010	3,176	3,152	3,126	3,205	3,368	3,676	3,923	3,923	3,994	4,108	4,157	4,214
9	27	2010	4,251	4,216	4,139	4,138	4,152	4,080	4,149	4,221	4,050	3,814	3,575	3,417
9	28	2010	3,265	3,270	3,246	3,302	3,440	3,767	3,995	3,985	3,976	4,129	4,070	4,149
9	28	2010	4,197	4,225	4,195	4,174	4,150	4,112	4,116	4,213	4,030	3,745	3,517	3,371
9	29	2010	3,324	3,268	3,258	3,253	3,367	3,709	4,001	3,994	4,052	4,132	4,189	4,248
9	29	2010	4,314	4,286	4,303	4,306	4,344	4,255	4,250	4,340	4,161	3,907	3,620	3,448
9	30	2010	3,331	3,285	3,221	3,273	3,425	3,750	3,954	3,995	4,044	4,199	4,191	4,281
9	30	2010	4,323	4,311	4,276	4,268	4,236	4,230	4,258	4,304	4,144	3,868	3,598	3,440

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
10	1	2010	3,336	3,252	3,205	3,239	3,373	3,663	3,860	3,900	3,933	4,018	4,044	4,067
10	1	2010	4,102	4,113	4,068	4,042	3,998	3,908	3,863	3,907	3,783	3,609	3,414	3,246
10	2	2010	3,123	3,067	3,038	3,037	3,094	3,196	3,315	3,448	3,574	3,627	3,655	3,669
10	2	2010	3,625	3,588	3,542	3,510	3,517	3,508	3,581	3,648	3,567	3,419	3,255	3,094
10	3	2010	3,012	2,983	2,961	2,961	3,001	3,087	3,209	3,308	3,411	3,564	3,554	3,525
10	3	2010	3,641	3,618	3,533	3,602	3,642	3,670	3,815	3,855	3,732	3,577	3,519	3,371
10	4	2010	3,339	3,299	3,354	3,397	3,568	3,916	4,184	4,166	4,206	4,237	4,253	4,235
10	4	2010	4,228	4,170	4,167	4,097	4,059	3,965	4,065	4,193	4,081	3,810	3,656	3,465
10	5	2010	3,412	3,421	3,437	3,486	3,687	4,067	4,308	4,259	4,223	4,224	4,193	4,227
10	5	2010	4,226	4,189	4,133	4,076	4,018	4,025	4,107	4,169	4,015	3,865	3,628	3,510
10	6	2010	3,355	3,321	3,271	3,395	3,600	3,959	4,108	4,098	4,098	4,124	4,115	4,141
10	6	2010	4,134	4,051	4,043	4,055	4,049	4,015	4,102	4,235	4,069	3,867	3,625	3,506
10	7	2010	3,374	3,353	3,361	3,357	3,527	3,842	4,050	4,049	4,150	4,272	4,209	4,210
10	7	2010	4,326	4,391	4,375	4,310	4,340	4,245	4,256	4,350	4,202	3,906	3,708	3,536
10	8	2010	3,399	3,366	3,305	3,321	3,431	3,725	3,976	3,978	3,984	4,059	4,127	4,152
10	8	2010	4,186	4,188	4,214	4,196	4,265	4,190	4,146	4,012	3,910	3,788	3,604	3,420
10	9	2010	3,324	3,249	3,221	3,219	3,253	3,361	3,472	3,544	3,633	3,799	3,883	3,931
10	9	2010	3,962	3,971	4,082	4,137	4,193	4,115	4,116	4,111	3,970	3,741	3,519	3,393
10	10	2010	3,157	3,094	3,135	3,097	3,103	3,184	3,310	3,385	3,532	3,664	3,775	3,866
10	10	2010	4,030	4,082	4,157	4,316	4,349	4,293	4,330	4,290	4,118	3,890	3,652	3,460
10	11	2010	3,422	3,322	3,312	3,346	3,489	3,820	4,122	4,133	4,248	4,341	4,382	4,598
10	11	2010	4,710	4,771	4,779	4,776	4,714	4,654	4,670	4,640	4,417	4,112	3,845	3,579
10	12	2010	3,460	3,425	3,410	3,439	3,516	3,914	4,144	4,084	4,208	4,350	4,398	4,453
10	12	2010	4,549	4,554	4,519	4,469	4,412	4,410	4,492	4,505	4,321	4,075	3,831	3,641
10	13	2010	3,531	3,426	3,401	3,452	3,582	3,896	4,168	4,225	4,218	4,317	4,374	4,392
10	13	2010	4,495	4,425	4,407	4,340	4,281	4,287	4,371	4,273	4,094	3,866	3,636	3,496
10	14	2010	3,425	3,382	3,398	3,374	3,437	3,770	4,029	4,036	4,016	4,065	4,073	4,126
10	14	2010	4,100	4,077	4,016	3,971	3,895	3,871	4,019	4,044	3,922	3,699	3,504	3,339
10	15	2010	3,274	3,257	3,248	3,295	3,527	3,902	4,033	4,144	4,179	4,209	4,225	4,247
10	15	2010	4,185	4,169	4,092	4,005	4,020	3,915	3,959	4,005	3,908	3,694	3,548	3,377
10	16	2010	3,312	3,288	3,228	3,274	3,333	3,466	3,637	3,669	3,707	3,793	3,759	3,738
10	16	2010	3,711	3,699	3,698	3,692	3,688	3,667	3,737	3,821	3,725	3,554	3,387	3,247
10	17	2010	3,177	3,144	3,097	3,129	3,134	3,186	3,277	3,335	3,402	3,531	3,591	3,670
10	17	2010	3,670	3,696	3,723	3,749	3,785	3,763	3,899	3,888	3,821	3,606	3,461	3,314
10	18	2010	3,220	3,213	3,226	3,273	3,453	3,850	4,126	4,171	4,186	4,211	4,244	4,279
10	18	2010	4,252	4,196	4,199	4,119	4,157	4,224	4,237	4,239	4,111	3,904	3,708	3,520
10	19	2010	3,479	3,377	3,320	3,429	3,591	3,953	4,230	4,273	4,203	4,132	4,234	4,185
10	19	2010	4,228	4,118	4,121	4,051	4,034	3,988	4,189	4,136	4,067	3,804	3,657	3,465
10	20	2010	3,385	3,358	3,330	3,370	3,514	3,883	4,196	4,188	4,176	4,177	4,159	4,156
10	20	2010	4,151	4,118	4,077	4,045	3,982	3,955	4,075	4,102	3,951	3,757	3,525	3,383
10	21	2010	3,315	3,261	3,198	3,267	3,499	3,844	4,044	4,052	4,089	4,176	4,173	4,143
10	21	2010	4,187	4,100	4,030	4,016	4,007	3,943	4,134	4,173	4,006	3,899	3,655	3,594
10	22	2010	3,480	3,491	3,478	3,472	3,691	4,021	4,225	4,248	4,248	4,218	4,221	4,131
10	22	2010	4,104	4,054	4,018	3,877	3,842	3,891	3,999	3,995	3,930	3,715	3,568	3,412
10	23	2010	3,359	3,313	3,249	3,259	3,361	3,468	3,630	3,666	3,831	3,888	3,850	3,796
10	23	2010	3,806	3,794	3,701	3,710	3,666	3,668	3,797	3,809	3,657	3,539	3,402	3,225
10	24	2010	3,152	3,104	3,059	3,020	3,115	3,168	3,222	3,371	3,477	3,553	3,642	3,665
10	24	2010	3,728	3,663	3,677	3,662	3,759	3,830	3,968	3,959	3,812	3,682	3,526	3,381
10	25	2010	3,287	3,225	3,249	3,236	3,434	3,697	4,040	4,065	4,055	4,120	4,176	4,188
10	25	2010	4,192	4,196	4,123	4,067	4,040	4,115	4,260	4,212	4,060	3,835	3,599	3,418
10	26	2010	3,322	3,298	3,247	3,310	3,462	3,774	4,139	4,200	4,147	4,099	4,073	4,098
10	26	2010	4,068	4,022	3,979	3,967	3,947	3,933	4,107	4,076	3,934	3,705	3,523	3,380
10	27	2010	3,286	3,244	3,238	3,277	3,453	3,768	4,037	4,051	4,063	4,082	4,064	4,126
10	27	2010	4,145	4,102	4,051	4,018	4,000	3,990	4,128	4,127	4,019	3,751	3,580	3,415
10	28	2010	3,324	3,294	3,260	3,297	3,463	3,813	4,097	4,165	4,159	4,231	4,181	4,200
10	28	2010	4,176	4,167	4,120	4,124	4,115	4,206	4,367	4,346	4,195	3,956	3,823	3,652
10	29	2010	3,562	3,535	3,515	3,573	3,754	4,078	4,322	4,321	4,324	4,300	4,161	4,181
10	29	2010	4,139	4,070	3,950	3,866	3,861	3,830	3,984	4,026	3,990	3,876	3,696	3,563
10	30	2010	3,522	3,494	3,483	3,492	3,595	3,677	3,855	3,983	4,026	4,012	3,921	3,864
10	30	2010	3,774	3,680	3,643	3,615	3,608	3,618	3,734	3,768	3,624	3,537	3,408	3,253
10	31	2010	3,206	3,182	3,169	3,178	3,227	3,306	3,466	3,538	3,644	3,652	3,656	3,656
10	31	2010	3,620	3,510	3,526	3,551	3,583	3,592	3,791	3,859	3,781	3,708	3,579	3,494

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
11	1	2010	3,422	3,432	3,382	3,451	3,659	4,053	4,356	4,354	4,334	4,286	4,231	4,173
11	1	2010	4,139	4,054	4,005	3,912	3,927	4,025	4,220	4,213	4,078	3,905	3,710	3,575
11	2	2010	3,493	3,412	3,423	3,516	3,711	4,089	4,344	4,360	4,332	4,268	4,177	4,156
11	2	2010	4,100	4,037	3,996	3,967	3,993	4,114	4,260	4,250	4,150	3,944	3,756	3,617
11	3	2010	3,572	3,563	3,571	3,655	3,882	4,235	4,506	4,519	4,431	4,349	4,281	4,239
11	3	2010	4,189	4,081	4,039	4,018	4,016	4,091	4,243	4,229	4,121	3,911	3,711	3,567
11	4	2010	3,508	3,456	3,479	3,538	3,714	4,108	4,379	4,406	4,359	4,298	4,214	4,208
11	4	2010	4,180	4,144	4,090	4,059	4,087	4,170	4,323	4,286	4,188	3,965	3,796	3,644
11	5	2010	3,538	3,505	3,485	3,575	3,778	4,127	4,398	4,380	4,366	4,343	4,302	4,279
11	5	2010	4,247	4,199	4,116	4,125	4,135	4,229	4,285	4,269	4,158	4,025	3,840	3,698
11	6	2010	3,619	3,609	3,608	3,626	3,752	3,877	4,043	4,169	4,224	4,251	4,104	3,990
11	6	2010	3,925	3,824	3,738	3,730	3,729	3,875	4,036	4,016	4,018	3,937	3,756	3,648
11	7	2010	3,550	3,516	3,557	3,597	3,627	3,692	3,782	3,915	4,011	3,981	3,892	3,845
11	7	2010	3,814	3,730	3,661	3,662	3,660	3,816	4,008	3,999	3,920	3,787	3,662	3,543
11	8	2010	3,521	3,448	3,474	3,489	3,575	3,804	4,192	4,424	4,366	4,380	4,310	4,246
11	8	2010	4,259	4,221	4,146	4,068	4,033	4,117	4,238	4,329	4,294	4,142	3,920	3,694
11	9	2010	3,568	3,476	3,485	3,546	3,625	3,810	4,245	4,366	4,310	4,326	4,258	4,237
11	9	2010	4,225	4,196	4,125	4,057	4,025	4,136	4,302	4,241	4,197	4,049	3,860	3,670
11	10	2010	3,520	3,453	3,436	3,487	3,591	3,774	4,165	4,314	4,303	4,207	4,111	4,121
11	10	2010	4,117	4,150	4,133	4,090	4,056	4,123	4,314	4,253	4,175	4,017	3,856	3,590
11	11	2010	3,495	3,423	3,501	3,389	3,512	3,696	4,042	4,193	4,229	4,248	4,272	4,233
11	11	2010	4,269	4,276	4,198	4,128	4,149	4,153	4,306	4,252	4,172	4,095	3,848	3,691
11	12	2010	3,459	3,444	3,394	3,397	3,521	3,669	4,036	4,240	4,221	4,092	4,139	4,099
11	12	2010	4,131	4,128	4,134	4,069	4,036	4,053	4,142	4,090	4,001	3,914	3,673	3,558
11	13	2010	3,391	3,404	3,338	3,291	3,356	3,436	3,533	3,666	3,734	3,832	3,890	3,832
11	13	2010	3,838	3,751	3,731	3,673	3,782	3,899	3,911	3,887	3,832	3,750	3,584	3,434
11	14	2010	3,330	3,280	3,258	3,308	3,255	3,332	3,386	3,600	3,754	3,766	3,769	3,748
11	14	2010	3,735	3,704	3,646	3,613	3,663	3,914	4,074	4,102	4,105	3,963	3,847	3,680
11	15	2010	3,643	3,621	3,597	3,577	3,755	3,966	4,342	4,532	4,555	4,535	4,465	4,397
11	15	2010	4,359	4,265	4,183	4,177	4,219	4,367	4,509	4,439	4,456	4,339	4,151	3,969
11	16	2010	3,892	3,854	3,794	3,806	3,942	4,086	4,443	4,658	4,645	4,584	4,546	4,601
11	16	2010	4,621	4,582	4,571	4,520	4,550	4,685	4,689	4,638	4,542	4,411	4,223	4,030
11	17	2010	3,903	3,844	3,772	3,758	3,912	4,070	4,373	4,501	4,394	4,345	4,300	4,218
11	17	2010	4,180	4,133	4,072	4,010	4,126	4,291	4,429	4,450	4,493	4,340	4,165	4,082
11	18	2010	3,898	3,860	3,745	3,775	3,851	3,998	4,314	4,539	4,529	4,520	4,539	4,487
11	18	2010	4,478	4,440	4,395	4,367	4,405	4,473	4,622	4,644	4,574	4,382	4,303	4,107
11	19	2010	4,010	3,936	3,963	3,985	4,035	4,256	4,583	4,783	4,782	4,737	4,725	4,678
11	19	2010	4,564	4,558	4,452	4,368	4,326	4,435	4,482	4,366	4,408	4,250	4,065	3,936
11	20	2010	3,701	3,737	3,680	3,557	3,733	3,809	3,952	4,056	4,193	4,252	4,224	4,126
11	20	2010	4,116	4,022	3,965	3,928	3,879	4,111	4,120	4,137	4,137	4,064	3,923	3,778
11	21	2010	3,633	3,560	3,496	3,499	3,397	3,531	3,601	3,707	3,729	3,724	3,775	3,731
11	21	2010	3,740	3,728	3,707	3,648	3,676	3,851	3,931	4,020	3,965	3,858	3,670	3,539
11	22	2010	3,436	3,337	3,358	3,324	3,378	3,578	3,895	4,172	4,168	4,226	4,285	4,255
11	22	2010	4,131	4,234	4,238	4,184	4,180	4,297	4,384	4,322	4,223	4,092	3,911	3,655
11	23	2010	3,521	3,465	3,387	3,318	3,347	3,618	3,946	4,248	4,257	4,339	4,364	4,291
11	23	2010	4,293	4,282	4,210	4,177	4,166	4,379	4,544	4,525	4,529	4,372	4,262	4,144
11	24	2010	4,027	3,971	3,966	3,949	4,044	4,170	4,420	4,625	4,687	4,707	4,733	4,728
11	24	2010	4,740	4,740	4,753	4,723	4,697	4,765	4,765	4,704	4,586	4,421	4,207	3,966
11	25	2010	3,741	3,570	3,462	3,416	3,390	3,384	3,482	3,559	3,729	3,877	3,975	3,945
11	25	2010	3,762	3,602	3,512	3,485	3,445	3,593	3,720	3,783	3,829	3,779	3,691	3,664
11	26	2010	3,657	3,576	3,622	3,683	3,739	3,874	4,027	4,156	4,116	4,167	4,174	4,176
11	26	2010	4,126	4,047	3,935	3,960	4,016	4,220	4,387	4,363	4,319	4,210	4,074	3,942
11	27	2010	3,758	3,735	3,641	3,643	3,661	3,745	3,846	4,001	4,061	4,140	4,172	4,139
11	27	2010	4,036	3,984	3,912	3,821	3,878	4,107	4,266	4,263	4,238	4,214	4,112	3,986
11	28	2010	3,871	3,847	3,763	3,802	3,896	3,913	4,009	4,178	4,170	4,135	4,093	4,019
11	28	2010	3,948	3,833	3,783	3,764	3,803	4,087	4,292	4,297	4,294	4,244	4,111	3,954
11	29	2010	3,901	3,796	3,752	3,824	3,904	4,133	4,469	4,719	4,686	4,670	4,576	4,468
11	29	2010	4,432	4,384	4,316	4,249	4,275	4,487	4,596	4,579	4,518	4,372	4,128	3,957
11	30	2010	3,752	3,684	3,624	3,554	3,615	3,781	4,114	4,328	4,371	4,399	4,443	4,447
11	30	2010	4,459	4,565	4,548	4,571	4,658	4,851	4,860	4,933	4,881	4,739	4,526	4,293

Month	Day	Year	Hr 1&13	Hr 2&14	Hr 3&15	Hr 4&16	Hr 5&17	Hr 6&18	Hr 7&19	Hr 8&20	Hr 9&21	Hr 10&22	Hr 11&23	Hr 12&24
12	1	2010	4,147	4,145	4,106	4,106	4,209	4,393	4,771	5,018	5,004	5,033	4,986	4,965
12	1	2010	4,870	4,889	4,841	4,831	4,847	4,979	5,089	5,038	4,960	4,914	4,720	4,500
12	2	2010	4,299	4,262	4,223	4,243	4,349	4,529	4,892	5,115	4,982	4,989	4,968	4,832
12	2	2010	4,834	4,716	4,729	4,716	4,770	4,907	5,037	5,011	4,943	4,797	4,524	4,362
12	3	2010	4,234	4,097	4,092	4,117	4,116	4,306	4,731	4,968	4,879	4,816	4,695	4,654
12	3	2010	4,579	4,563	4,479	4,407	4,514	4,691	4,768	4,747	4,654	4,587	4,402	4,142
12	4	2010	4,077	4,006	3,942	3,964	3,997	4,068	4,197	4,365	4,483	4,577	4,618	4,570
12	4	2010	4,561	4,506	4,499	4,440	4,531	4,670	4,783	4,760	4,664	4,567	4,348	4,263
12	5	2010	4,090	4,038	3,920	3,945	3,984	4,018	4,124	4,280	4,349	4,452	4,522	4,518
12	5	2010	4,558	4,524	4,507	4,571	4,663	4,864	4,980	4,943	4,984	4,890	4,694	4,552
12	6	2010	4,477	4,429	4,485	4,508	4,667	4,874	5,338	5,568	5,561	5,509	5,492	5,231
12	6	2010	5,155	5,114	5,025	4,985	5,073	5,351	5,563	5,514	5,481	5,442	5,175	4,919
12	7	2010	4,733	4,666	4,648	4,636	4,729	4,950	5,296	5,528	5,413	5,317	5,219	5,101
12	7	2010	5,070	5,022	4,970	4,929	4,924	5,216	5,439	5,471	5,459	5,393	5,157	5,001
12	8	2010	4,856	4,835	4,767	4,857	4,869	5,085	5,471	5,747	5,625	5,485	5,407	5,198
12	8	2010	5,134	5,035	4,945	4,901	4,912	5,155	5,361	5,334	5,367	5,285	5,079	4,906
12	9	2010	4,813	4,729	4,801	4,782	4,893	5,125	5,421	5,735	5,560	5,427	5,289	5,170
12	9	2010	5,098	5,006	4,986	4,931	4,973	5,144	5,213	5,226	5,082	4,976	4,774	4,537
12	10	2010	4,347	4,287	4,198	4,197	4,209	4,449	4,720	4,986	4,922	4,849	4,736	4,595
12	10	2010	4,563	4,535	4,447	4,370	4,354	4,561	4,700	4,647	4,673	4,594	4,399	4,245
12	11	2010	4,102	4,011	3,963	3,951	3,970	4,007	4,080	4,292	4,387	4,422	4,439	4,363
12	11	2010	4,319	4,290	4,321	4,270	4,351	4,518	4,521	4,415	4,300	4,277	4,137	3,946
12	12	2010	3,874	3,835	3,795	3,857	3,921	3,925	4,071	4,229	4,373	4,531	4,600	4,646
12	12	2010	4,743	4,684	4,689	4,712	4,752	4,991	5,117	5,111	5,117	4,975	4,817	4,685
12	13	2010	4,604	4,512	4,538	4,623	4,724	4,944	5,206	5,488	5,507	5,442	5,394	5,297
12	13	2010	5,242	5,212	5,141	5,104	5,196	5,406	5,599	5,590	5,546	5,398	5,292	5,119
12	14	2010	4,955	4,871	4,942	4,909	5,057	5,210	5,576	5,786	5,767	5,620	5,378	5,199
12	14	2010	5,091	4,972	4,903	4,837	4,895	5,190	5,380	5,408	5,423	5,338	5,255	5,074
12	15	2010	4,989	4,921	4,965	5,005	5,093	5,268	5,711	5,857	5,825	5,609	5,410	5,217
12	15	2010	5,084	4,979	4,918	4,926	4,983	5,192	5,314	5,270	5,180	5,063	4,882	4,741
12	16	2010	4,598	4,539	4,506	4,481	4,575	4,726	5,020	5,137	5,185	5,115	5,047	4,968
12	16	2010	4,912	4,856	4,820	4,779	4,819	5,024	5,084	5,102	5,024	4,910	4,803	4,591
12	17	2010	4,480	4,438	4,353	4,408	4,475	4,636	4,864	5,045	5,041	5,058	5,003	4,940
12	17	2010	4,905	4,855	4,804	4,766	4,783	4,962	5,061	5,126	5,055	5,011	4,911	4,727
12	18	2010	4,555	4,444	4,379	4,364	4,457	4,573	4,727	4,867	4,990	4,987	4,896	4,749
12	18	2010	4,631	4,527	4,431	4,378	4,388	4,632	4,818	4,811	4,835	4,785	4,623	4,474
12	19	2010	4,330	4,257	4,257	4,292	4,294	4,393	4,514	4,643	4,784	4,760	4,687	4,538
12	19	2010	4,449	4,429	4,422	4,439	4,530	4,690	4,783	4,770	4,742	4,680	4,546	4,353
12	20	2010	4,251	4,198	4,193	4,192	4,260	4,493	4,779	4,977	5,055	5,055	4,989	4,906
12	20	2010	4,845	4,837	4,748	4,711	4,703	4,955	5,090	5,032	4,994	4,943	4,751	4,520
12	21	2010	4,369	4,239	4,143	4,201	4,229	4,416	4,676	4,896	4,894	4,919	4,888	4,873
12	21	2010	4,835	4,822	4,804	4,703	4,745	4,915	4,972	4,964	4,844	4,797	4,528	4,334
12	22	2010	4,210	4,126	4,109	4,079	4,098	4,259	4,564	4,880	4,933	4,975	4,981	4,990
12	22	2010	4,901	4,936	4,886	4,859	4,864	4,959	5,087	5,037	4,921	4,894	4,749	4,513
12	23	2010	4,377	4,280	4,249	4,216	4,277	4,420	4,588	4,843	4,823	4,838	4,831	4,703
12	23	2010	4,590	4,491	4,407	4,413	4,380	4,552	4,747	4,694	4,632	4,513	4,378	4,163
12	24	2010	4,001	3,892	3,764	3,746	3,798	3,880	3,895	4,004	4,081	4,129	4,121	4,075
12	24	2010	3,982	3,935	3,911	3,891	3,933	4,046	4,076	4,035	3,998	3,964	3,901	3,788
12	25	2010	3,666	3,557	3,526	3,521	3,525	3,582	3,689	3,818	3,887	3,933	3,950	3,894
12	25	2010	3,804	3,728	3,707	3,680	3,725	3,928	4,040	4,071	4,063	4,034	3,968	3,849
12	26	2010	3,754	3,703	3,692	3,708	3,733	3,832	3,930	4,062	4,135	4,200	4,214	4,253
12	26	2010	4,218	4,140	4,165	4,150	4,222	4,479	4,636	4,623	4,622	4,542	4,351	4,216
12	27	2010	4,122	4,131	4,106	4,154	4,263	4,464	4,583	4,743	4,771	4,861	4,890	4,827
12	27	2010	4,745	4,700	4,629	4,579	4,596	4,803	4,926	4,879	4,893	4,728	4,596	4,374
12	28	2010	4,284	4,213	4,253	4,274	4,181	4,333	4,633	4,814	4,796	4,891	4,866	4,743
12	28	2010	4,663	4,563	4,446	4,465	4,525	4,652	4,764	4,754	4,668	4,572	4,363	4,209
12	29	2010	4,125	4,059	4,064	4,102	4,122	4,192	4,407	4,633	4,646	4,601	4,519	4,437
12	29	2010	4,367	4,318	4,272	4,257	4,273	4,467	4,651	4,569	4,582	4,441	4,219	4,024
12	30	2010	3,915	3,789	3,779	3,776	3,790	3,879	3,996	4,212	4,262	4,283	4,246	4,299
12	30	2010	4,193	4,163	4,055	3,989	3,975	4,155	4,245	4,218	4,184	3,999	3,860	3,702
12	31	2010	3,541	3,490	3,415	3,371	3,405	3,493	3,573	3,714	3,782	3,854	3,872	3,892
12	31	2010	3,863	3,814	3,653	3,698	3,781	3,872	3,887	3,765	3,674	3,537	3,446	3,429

3. Duke Energy Indiana Long-Term Electric Forecast

The following pages pertain to customer demand for electric energy within the Duke Energy Indiana service territory.

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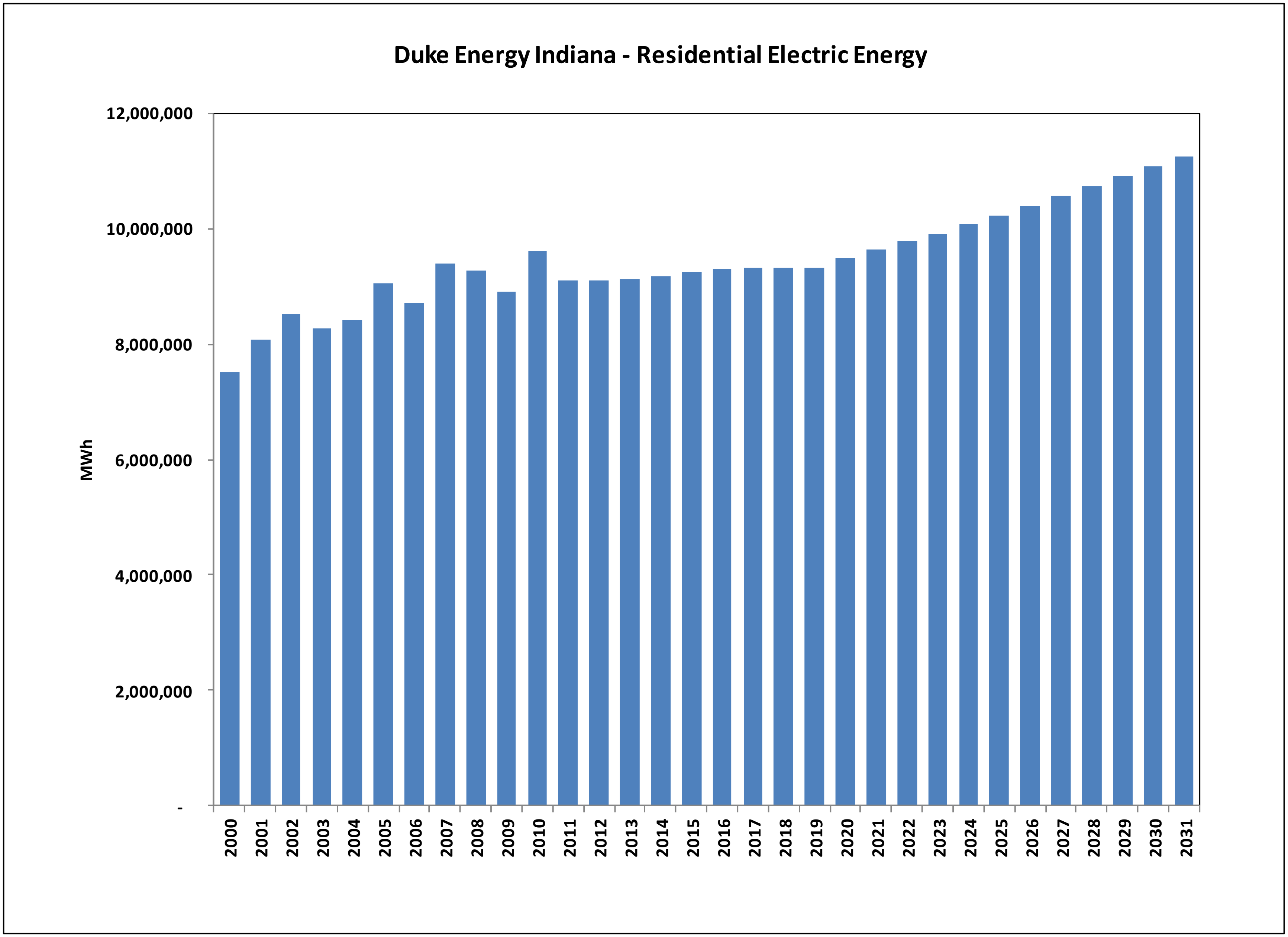
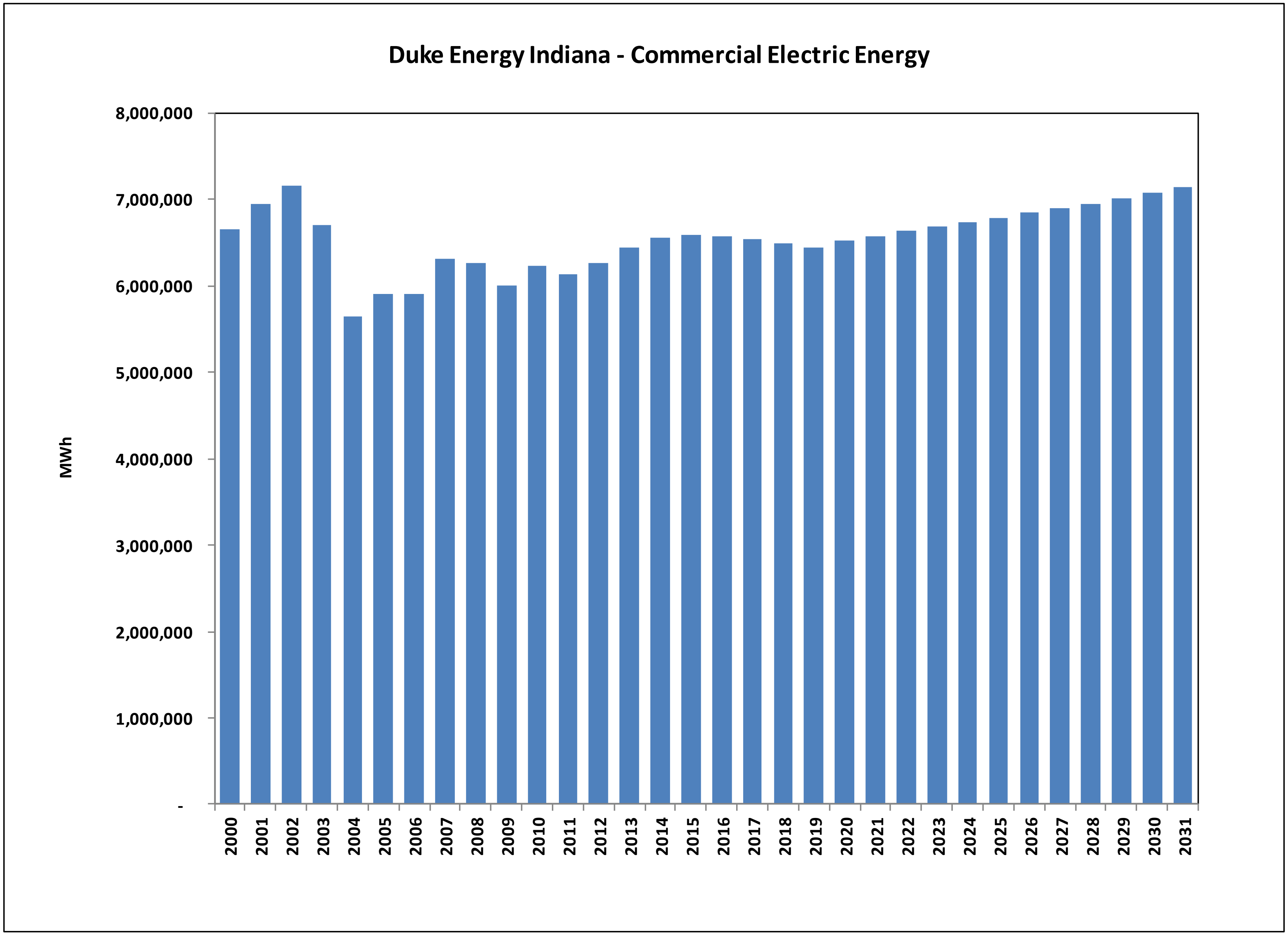

Duke Energy Indiana - Residential Electric Energy
MWh
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031


Duke Energy Indiana - Commercial Electric Energy
MWh
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
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2026
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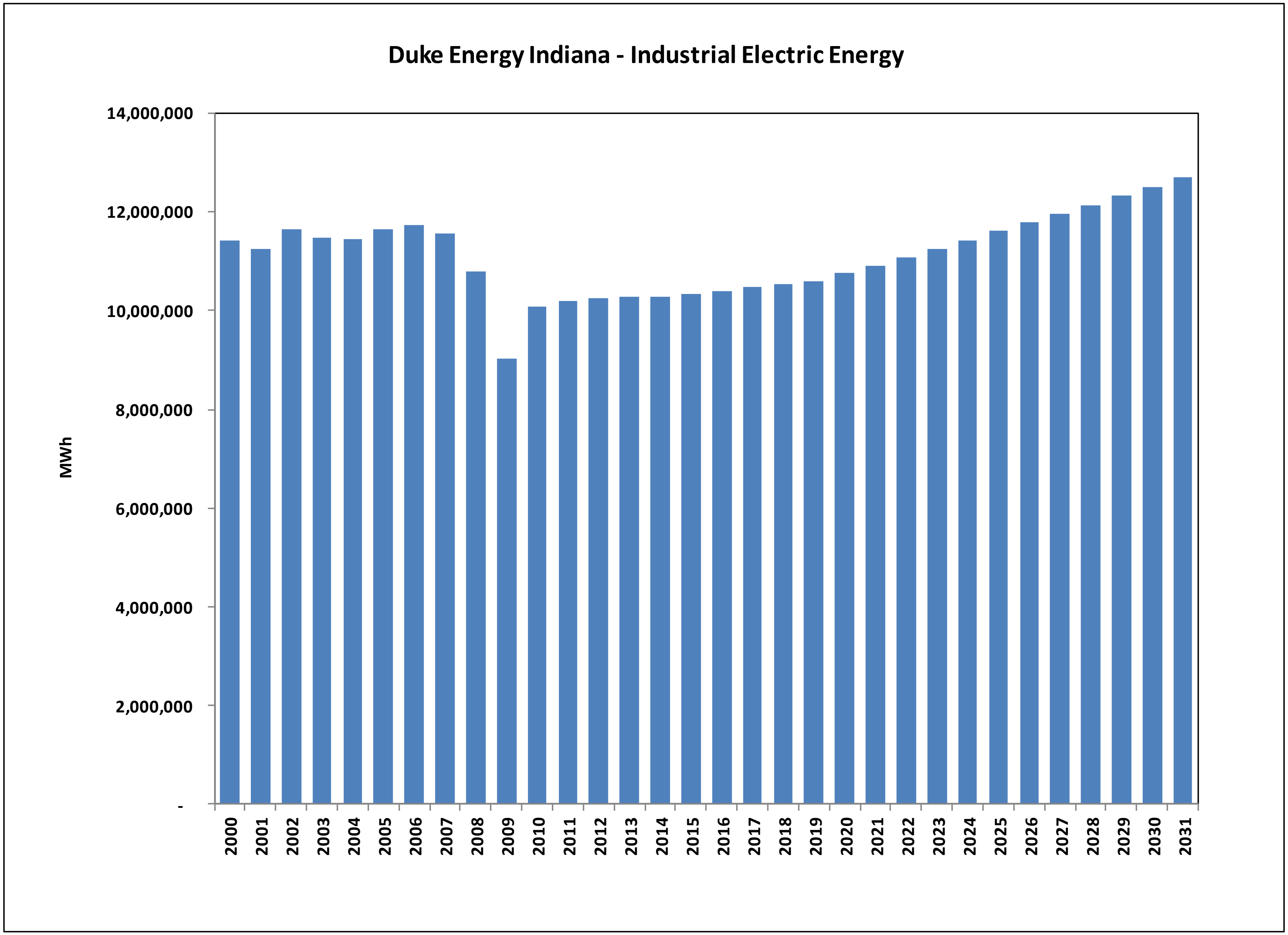
2028
2029
2030
2031


Duke Energy Indiana - Industrial Electric Energy
MWh
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
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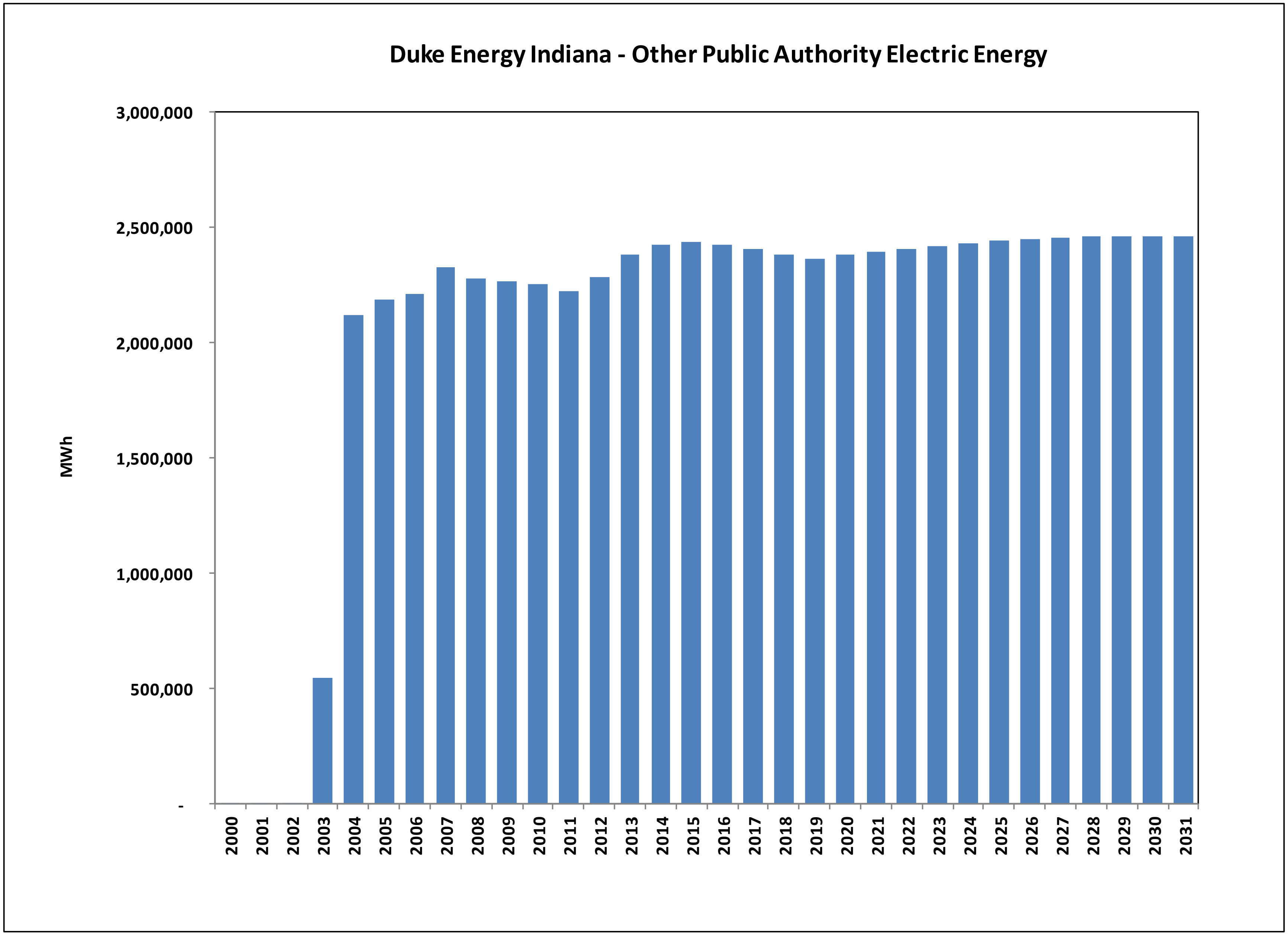
2030
2031

172



Duke Energy Indiana - Other Public Authority Electric Energy
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
MWh
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
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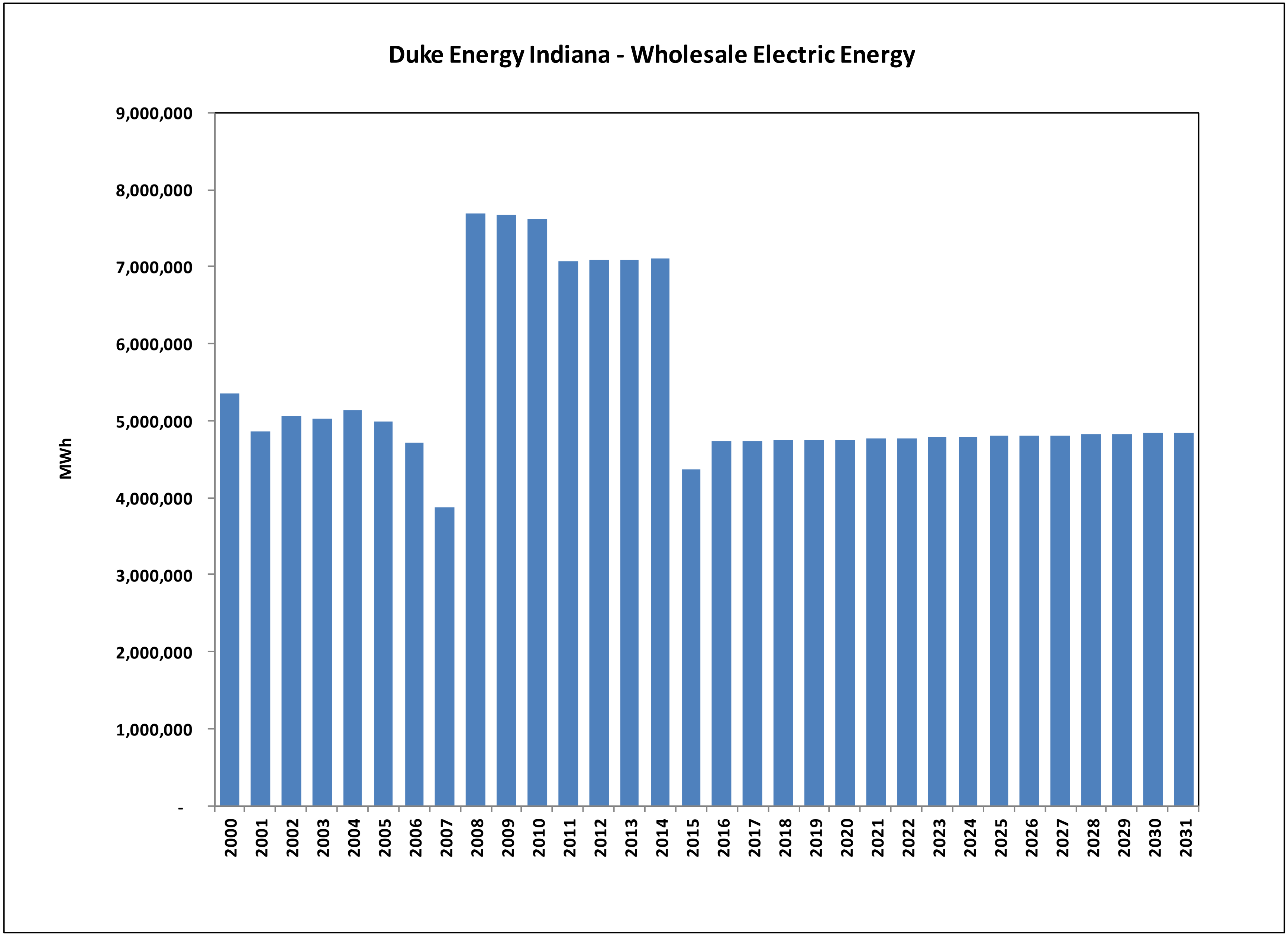
2030
2031


Duke Energy Indiana - Wholesale Electric Energy
MWh
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
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2018
2019
2020
2021
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2023
2024
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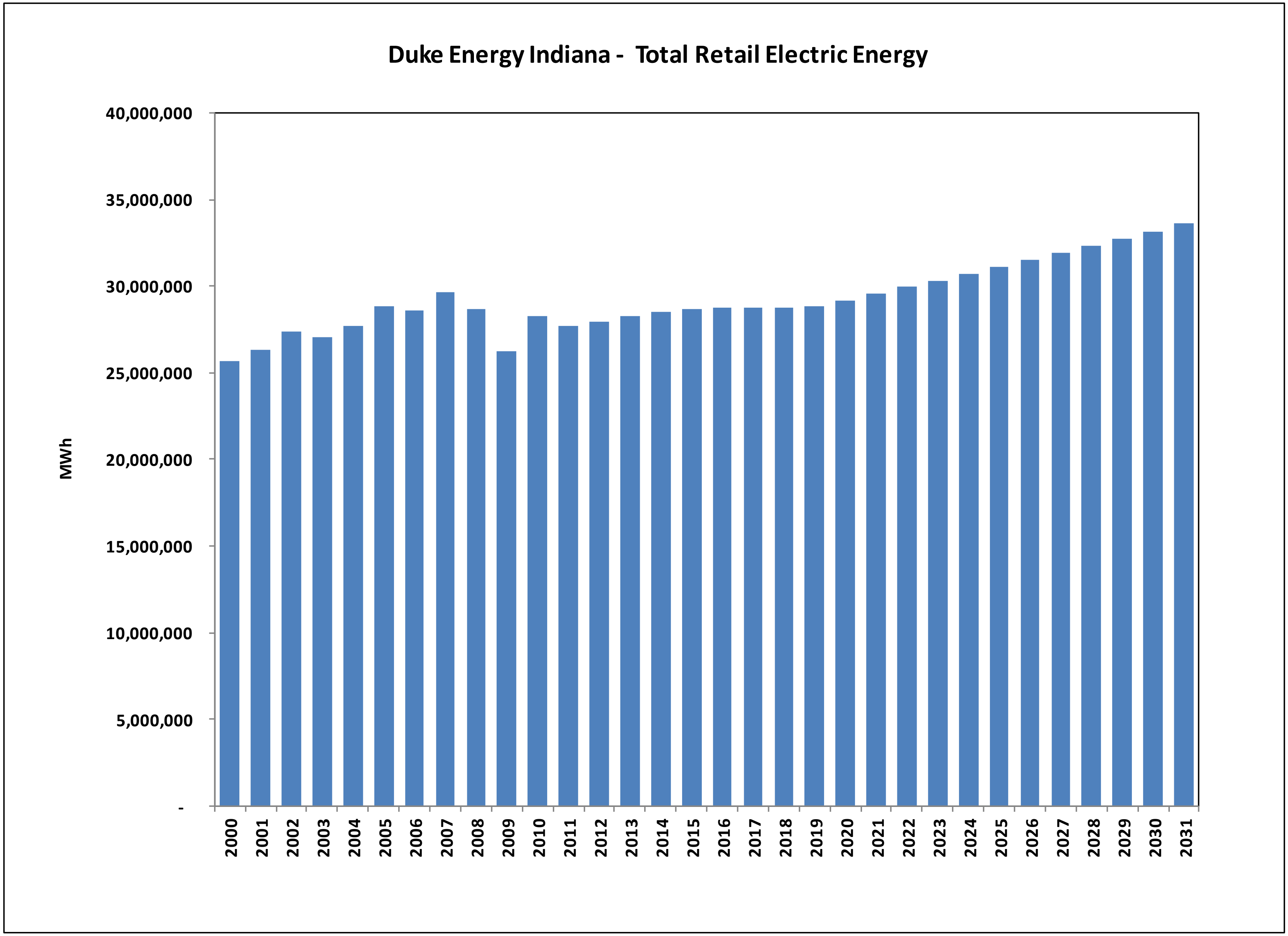
2026
2027
2028
2029
2030
2031


Duke Energy Indiana - Total Retail Electric Energy
MWh
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
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2019
2020
2021
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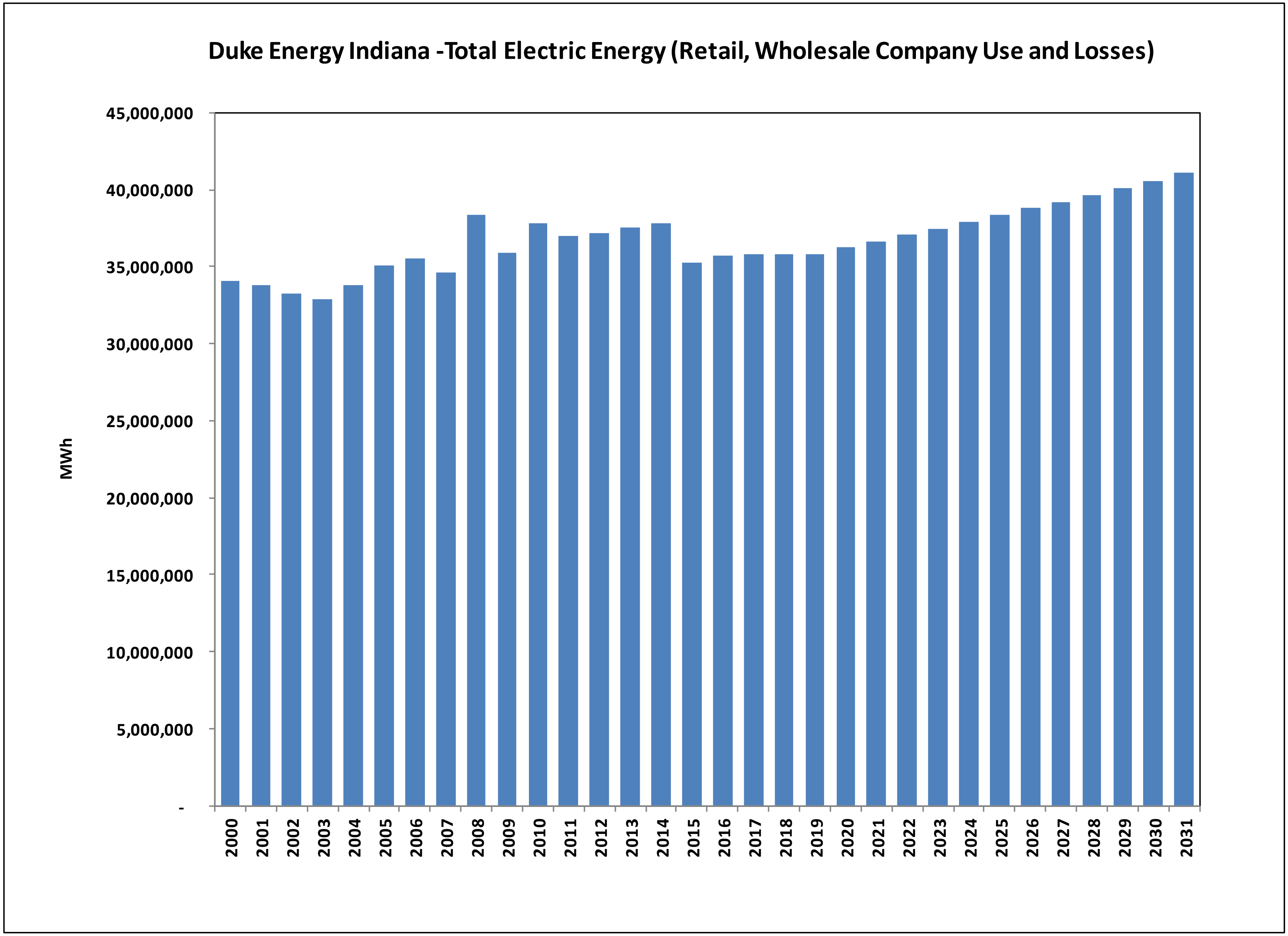
2030
2031


Duke Energy Indiana -Total Electric Energy (Retail, Wholesale Company Use and Losses)
MWh
45,000,000
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
-
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
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2011
2012
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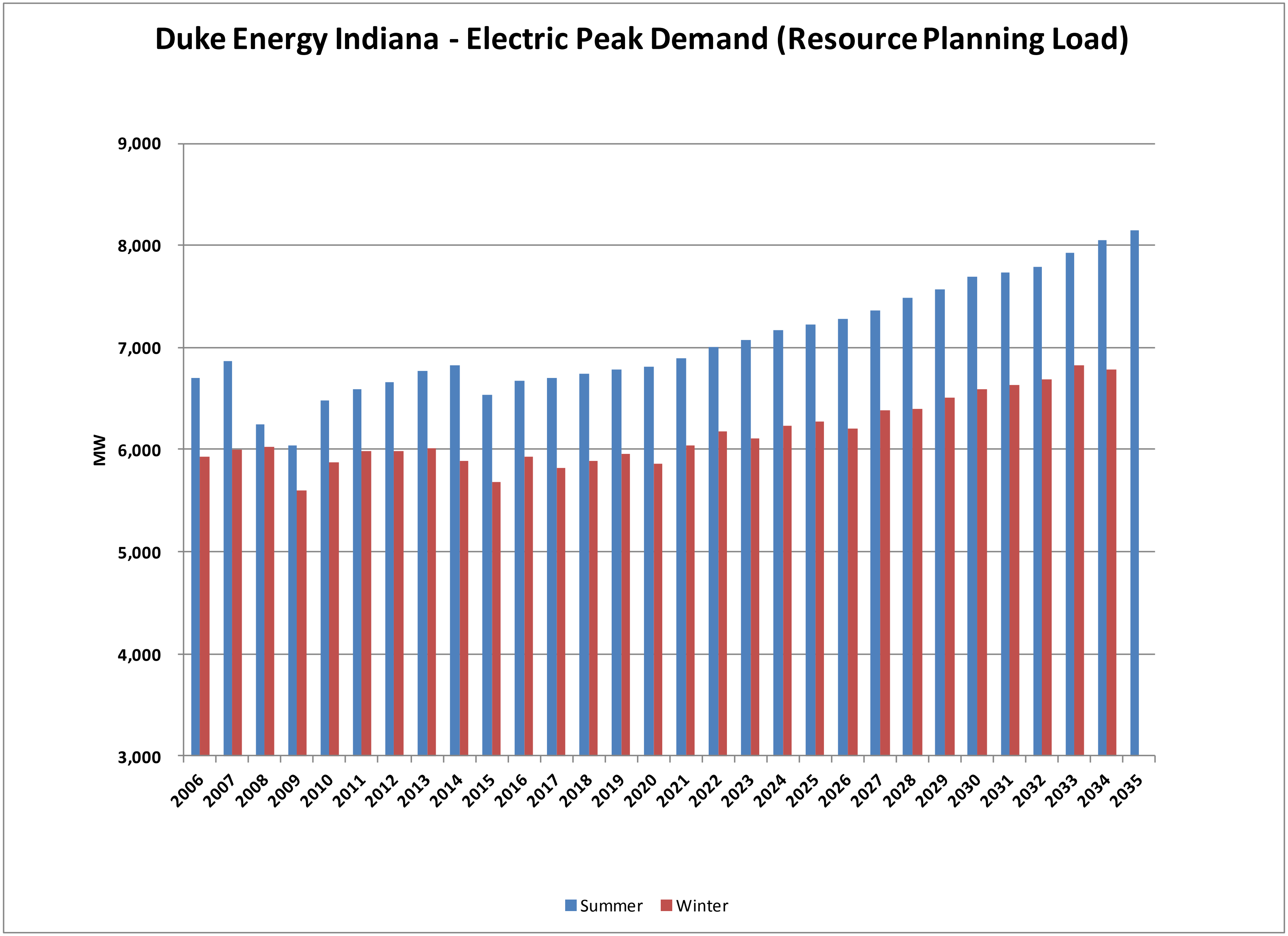
2031


Duke Energy Indiana - Electric Peak Demand (Resource Planning Load)
MW
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
Summer
Winter

DUKE ENERGY INDIANA
ELECTRIC CUSTOMERS
ANNUAL AVERAGES

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	STREET LIGHTING	O. P. A.	TOTAL CUSTOMERS	ANNUAL INCREASE	ELECTRIC - KWH RESIDENTIAL USE PER CUSTOMER
2006	665,217	87,575	2,884	1,095	9,394	766,166		13,107
2007	671,749	88,679	2,868	1,187	9,471	773,954	7,788	13,987
2008	673,412	89,544	2,842	1,261	9,586	776,646	2,692	13,762
2009	672,740	89,410	2,814	1,319	9,862	776,144	(501)	13,232
2010	677,998	89,554	2,790	1,358	10,119	781,819	5,675	14,173
2011	683,759	90,325	2,790	1,400	10,264	788,538	6,719	13,304
2012	689,055	91,402	2,833	1,433	10,387	795,110	6,572	13,203
2013	696,721	92,475	2,860	1,462	10,508	804,026	8,915	13,089
2014	706,255	93,491	2,879	1,486	10,624	814,735	10,709	12,982
2015	717,041	94,464	2,896	1,507	10,734	826,642	11,907	12,880
2016	727,804	95,407	2,910	1,525	10,842	838,488	11,846	12,760
2017	737,797	96,331	2,921	1,540	10,947	849,536	11,048	12,627
2018	747,132	97,232	2,930	1,553	11,049	859,895	10,359	12,483
2019	756,016	98,113	2,936	1,563	11,149	869,777	9,882	12,341
2020	764,593	99,002	2,940	1,572	11,250	879,356	9,579	12,408
2021	772,926	99,869	2,942	1,580	11,349	888,666	9,310	12,473
2022	781,069	100,719	2,943	1,588	11,445	897,764	9,098	12,514
2023	789,335	101,570	2,944	1,594	11,542	906,985	9,221	12,565
2024	797,722	102,402	2,944	1,600	11,637	916,305	9,320	12,622
2025	806,394	103,249	2,944	1,606	11,733	925,926	9,622	12,685
2026	815,034	104,072	2,944	1,612	11,826	935,488	9,562	12,749
2027	823,667	104,873	2,944	1,617	11,917	945,018	9,530	12,817
2028	832,368	105,670	2,943	1,622	12,008	954,611	9,593	12,888
2029	841,192	106,479	2,943	1,627	12,100	964,341	9,729	12,958
2030	850,108	107,289	2,942	1,632	12,192	974,163	9,823	13,029
2031	858,997	108,064	2,942	1,636	12,280	983,919	9,756	13,106
GROWTH RATE								
2011-2016	1.26%	1.10%	0.84%	1.73%	1.10%	1.24%	12.01%	-0.83%
2011-2021	1.23%	1.01%	0.53%	1.22%	1.01%	1.20%	3.32%	-0.64%
2011-2031	1.15%	0.90%	0.26%	0.78%	0.90%	1.11%	1.88%	-0.07%

NOTE: 2009 FIGURES REPRESENT TWELVE MONTHS FORECAST

4. Schedule for End-Use Surveys
(IURC Rule - Section 4(3))

In the residential sector, Duke Energy Indiana is currently on a three-year schedule for conducting customer end-use surveys. The most recent survey was conducted late 2010. The results of the survey will be incorporated into the Company's 2012 forecast. The current schedule calls for surveys to be conducted during 2013, and again in 2016. This schedule may be modified according to the information needs of the Duke Energy Indiana forecasting department and other departments.

In the commercial sector, the last survey was conducted in 1991. There has been no formal survey work conducted in the industrial sector. This is due to the nature of the sector itself. The industrial sector is a heterogeneous mix of distinct operations. Even customers within the same NAICS (North American Industry Classification System) can exhibit significant differences in processes and energy use patterns. For this reason, a formal on-site census is the preferred method for gathering useful end-use information. Currently, Duke Energy Indiana has no plans to conduct a formal industrial end-use census. This may also be modified according to the information needs of the Duke Energy Indiana forecasting department and other departments.

5. Evaluation of Previous 10 Years of Forecasts
(IURC Rule - Sections 4(5) and 5(a)(7))

Tables are attached showing actual versus forecast for the previous ten years.

In general, the methodology, the kinds of equations, and the types of data used have remained consistent over the years. In addition, on more than one occasion, the IURC has passed judgment on the reasonableness of the forecast and the methodology. Finally, the State Utility Forecasting Group (SUFG), though using models quite distinct from Duke Energy Indiana's, has historically produced forecasts that are similar to Duke Energy Indiana's.

Duke Energy Indiana Sales Forecasts - Comparison to Actuals in Thousands of Megawatt Hours (GWh)

	Actual	Feb. 2001	Feb. 2002	Feb. 2003	Feb. 2004	Aug. 2005	Feb. 2006	Feb. 2007	Feb. 2008	Feb. 2009	Feb. 2010	Feb. 2011
2001												
Residential	8072	7704										
Commercial	6947	6871										
Industrial	11235	11646										
Other	68	68										
Sales for Resale	4858	4861										
Total Sales	31180	31150										
2002												
Residential	8506	7808	8299									
Commercial	7153	6976	7153									
Industrial	11636	11779	11573									
Other	69	69	69									
Sales for Resale	5072	4945	4951									
Total Sales	32436	31577	32045									
2003												
Residential	8270	7900	8496	8511								
Commercial	6705	7090	7351	5899								
Industrial	11466	12044	11972	11278								
Other	609	69	70	2227								
Sales for Resale	5030	4785	5043	5072								
Total Sales	32080	31888	32932	32987								
2004												
Residential	8423	8060	8683	8763	8772							
Commercial	5642	7182	7493	6053	6079							
Industrial	11437	12246	12216	11515	11900							
Other	2171	70	70	2282	2109							
Sales for Resale	5128	4638	5138	5172	5029							
Total Sales	32801	32196	33600	33785	33889							
2005												
Residential	9063	8209	8853	8981	8992	8755						
Commercial	5912	7295	7596	6181	6061	5768						
Industrial	11646	12478	12549	11645	11652	11561						
Other	2243	71	71	2327	2140	2172						
Sales for Resale	4997	4440	4940	5019	4867	4772						
Total Sales	33861	32493	34009	34153	33712	33028						
2006												
Residential	8719	8335	9026	9158	9273	8940	9069					
Commercial	5903	7394	7717	6316	6202	5935	5847					
Industrial	11727	12698	12721	11871	11810	11712	11954					
Other	2266	72	72	2377	2188	2247	2259					
Sales for Resale	4724	4233	4740	4864	4701	4621	3064					
Total Sales	33339	32732	34276	34586	34174	33455	32193					
2007												
Residential	9396	8420	9146	9292	9510	9128	9212	9046				
Commercial	6318	7500	7826	6450	6305	5992	5923	6007				
Industrial	11572	12938	12990	12062	11970	11753	11933	11580				
Other	2383	72	73	2425	2226	2262	2281	2255				
Sales for Resale	3881	2650	3848	4074	3947	2962	1548	7690				
Total Sales	33550	31580	33883	34302	33958	30899	30899	30899				
2008												
Residential	9267	8546	9328	9483	9708	9294	9322	9162	9092			
Commercial	6263	7632	7966	6564	6397	6053	6006	6077	6277			
Industrial	10792	13220	13298	12227	12139	11793	11952	11486	11411			
Other	2335	73	74	2466	2260	2275	2307	2273	2402			
Sales for Resale	7701	2650	3248	3298	3232	1860	427	7320	7673			
Total Sales	36358	32121	33914	34038	33736	30015	30015	30015	30015			
2009												
Residential	8901	8612	9449	9599	9922	9449	9436	9326	9140	9021		
Commercial	6008	7737	8093	6673	6488	6131	6107	6162	6301	6178		
Industrial	9032	13482	13618	12401	12292	11847	12007	11533	11391	9496		
Other	2323	74	74	2506	2294	2300	2340	2300	2421	2315		
Sales for Resale	7675	2650	3027	3062	3232	1880	433	7327	7695	7597		
Total Sales	33939	32555	34261	34241	34227	31606	30324	36648	36948	34607		
2010												
Residential	9609	8686	9585	9739	10092	9615	9546	9482	9244	8863	9094	
Commercial	6229	7858	8214	6783	6568	6204	6204	6253	6362	6156	5974	
Industrial	10082	13804	13944	12619	12434	11900	12050	11654	11400	9824	9236	
Other	2310	75	75	2548	2323	2324	2371	2332	2431	2291	2352	
Sales for Resale	7631	2650	3053	3095	2999	1903	439	7335	7623	7665	7506	
Total Sales	35861	33072	34871	34784	34416	31946	30610	37056	37059	34799	34162	

Actual GWh energy reflects actual sales that are not weather normal and include actual impacts of energy efficiency.
Forecast GWh energy reflects weather normal sales and include the projected impacts of energy efficiency.

Duke Energy Indiana Summer Peak Forecasts - Comparison to Actual in Megawatts

	Actual	Feb. 2001	Feb. 2002	Feb. 2003	Feb. 2004	Aug. 2005	Feb. 2006	Feb. 2007	Feb. 2008	Feb. 2009	Feb. 2010	Feb. 2011
1997	5558											
1998	5705											
1999	5943											
2000	5850											
2001	6112	6207										
2002	6250	6304	6427									
2003	6133	6349	6536	6576								
2004	6136	6401	6649	6751	6136							
2005	6539	6417	6665	6772	6702	6719						
2006	6702	6466	6747	6856	6812	6835	6688					
2007	6705	6249	6532	6552	6509	6332	6171	6897				
2008	6213	6363	6632	6686	6586	6384	6218	6923	6998			
2009	6037	6424	6688	6710	6669	6442	6285	6995	7026	6759		
2010	6374	6468	6754	6763	6695	6502	6346	7082	7059	6797	6658	

Actual peaks reflect historical peaks. They are not weather normal and actual demand response has not been added back.
Projected peaks reflect a weather normal peak forecast before the impacts of demand response.

Duke Energy Indiana Winter Peak Forecasts - Comparison to Actual in Megawatts

	Actual	Feb. 2001	Feb. 2002	Feb. 2003	Feb. 2004	Aug. 2005	Feb. 2006	Feb. 2007	Feb. 2008	Feb. 2009	Feb. 2010	Feb. 2011
1997-98	4454											
1998-99	4883											
1999-00	5114											
2000-01	5161											
2001-02	5098	5147										
2002-03	5475	5207	5281									
2003-04	5568	5233	5386	5616								
2004-05	5701	5293	5461	5718	5775							
2005-06	5617	5268	5437	5814	5796	5885						
2006-07	5762	5125	5254	5649	5870	5944	5691					
2007-08	5996	5190	5290	5727	5755	5530	5330	6043				
2008-09	5920	5218	5332	5770	5824	5584	5375	6096	6153			
2009-10	5602	5279	5409	5832	5845	5645	5418	6157	6199	6154		
2010-11	5878	5313	5452	5888	5907	5709	5472	6226	6262	6202	5920	5961

Actual peaks reflect historical peaks. They are not weather normal and actual demand response has not been added back.
Projected peaks reflect a weather normal peak forecast before the impacts of demand response.

6. 2008 Hourly System Lambda
(IURC Rule - Section 4(17))

With MISO Day 2, an hourly system lambda is not really an available, nor particularly meaningful, number. Instead, the Company determined that using the Day Ahead Duke Energy Indiana load zone price would be the most comparable number to a "system lambda". Therefore, both the energy component only and the full price (including congestion and losses) of the Day Ahead LMP have been provided on the following pages.

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
1/1/2010 0:00	25.98	24.60	23.90	23.06	22.40	22.44	22.25	23.32	24.35	26.68	28.89	29.24
1/1/2010 0:00	28.7	27.23	25.86	25.78	26.89	47.85	56.49	51.94	54.09	44.73	39.89	28.98
1/2/2010 0:00	28.61	28.73	27.92	26.27	25.74	26.04	28.07	31.20	34.01	42.92	55.65	53.90
1/2/2010 0:00	44.39	39.38	33.24	32.06	34.51	63.45	81.08	63.92	60.67	51.77	49.24	46.10
1/3/2010 0:00	38.04	35.41	33.30	31.48	30.34	29.71	32.08	32.46	37.39	42.47	49.38	46.96
1/3/2010 0:00	41.35	35.14	31.12	30.93	33.60	59.37	83.23	66.91	59.62	49.65	46.58	40.91
1/4/2010 0:00	40.34	36.94	34.44	33.86	34.51	40.57	63.76	73.27	70.91	68.23	69.43	65.48
1/4/2010 0:00	55.32	50.50	46.73	43.60	45.34	72.61	94.88	79.76	72.44	68.25	52.40	47.17
1/5/2010 0:00	33.67	31.44	29.15	29.23	29.96	34.84	54.23	64.64	62.79	60.09	59.94	58.12
1/5/2010 0:00	51.28	44.37	40.08	36.26	37.03	63.38	80.81	70.44	65.00	57.73	43.16	34.92
1/6/2010 0:00	36.72	34.31	31.76	32.35	35.18	41.49	61.27	78.13	70.29	66.30	68.81	65.63
1/6/2010 0:00	61.34	52.35	44.26	40.55	41.61	66.21	82.95	68.98	61.15	55.15	44.18	36.35
1/7/2010 0:00	30.35	28.72	28.78	27.88	28.46	34.58	51.70	63.98	62.08	58.52	62.28	60.60
1/7/2010 0:00	57.16	52.22	45.04	40.01	41.64	65.65	82.48	67.86	61.34	54.96	44.25	31.17
1/8/2010 0:00	27.72	27.43	26.93	26.47	26.51	28.12	41.16	58.29	56.10	56.41	60.85	60.36
1/8/2010 0:00	58.55	56.68	45.88	39.47	40.29	65.22	74.40	55.04	51.91	51.55	47.02	38.09
1/9/2010 0:00	41.53	39.72	35.98	34.48	34.08	36.82	44.43	54.90	58.84	62.16	63.83	58.78
1/9/2010 0:00	51.56	45.46	38.27	34.19	36.12	62.01	78.19	67.76	61.46	53.02	49.46	41.49
1/10/2010 0:00	39.49	38.36	35.77	34.34	32.83	32.18	32.87	33.98	38.67	46.77	48.49	46.76
1/10/2010 0:00	41.24	35.53	30.71	29.62	29.96	55.84	79.20	66.35	60.48	51.75	47.20	39.40
1/11/2010 0:00	33.00	29.72	30.55	29.30	30.17	34.32	47.14	65.89	66.73	63.55	66.78	63.90
1/11/2010 0:00	61.56	52.98	43.78	39.43	40.53	66.30	87.08	69.47	66.88	58.22	45.44	39.87
1/12/2010 0:00	28.86	27.84	27.12	26.91	27.46	29.44	42.83	59.29	57.30	53.45	55.68	53.25
1/12/2010 0:00	49.41	43.80	36.64	32.71	31.64	52.90	71.86	59.44	52.88	45.41	34.28	32.12
1/13/2010 0:00	27.37	26.32	26.42	26.44	26.82	28.33	43.09	53.47	52.21	50.44	50.98	48.52
1/13/2010 0:00	44.46	36.73	31.06	28.90	28.66	48.33	64.71	53.47	50.53	41.40	30.27	29.18
1/14/2010 0:00	29.08	27.85	26.76	26.46	27.26	30.85	46.91	56.88	50.75	50.44	50.13	48.15
1/14/2010 0:00	39.46	35.41	30.40	29.21	29.36	48.17	55.44	50.78	46.69	40.11	30.21	28.58
1/15/2010 0:00	27.04	25.41	25.66	24.75	25.69	28.02	40.20	53.72	49.71	50.90	50.30	46.39
1/15/2010 0:00	41.48	35.31	31.02	28.87	28.43	43.49	50.73	48.37	41.47	33.49	28.22	28.26
1/16/2010 0:00	26.21	25.27	24.39	23.86	23.84	25.01	28.08	30.75	33.08	39.83	41.31	35.97
1/16/2010 0:00	31.48	28.72	27.16	26.87	27.45	38.00	47.28	42.57	36.95	32.72	28.16	26.19
1/17/2010 0:00	25.20	24.18	24.05	23.54	22.96	22.23	23.68	26.10	27.13	29.48	30.28	31.50
1/17/2010 0:00	29.73	28.73	27.61	27.38	28.34	45.95	54.19	52.96	48.59	40.41	29.65	26.48
1/18/2010 0:00	24.01	23.61	23.09	22.95	23.40	24.79	29.65	45.13	45.73	50.46	53.04	48.83
1/18/2010 0:00	45.38	40.86	34.04	31.08	30.70	46.80	53.01	50.13	46.48	41.43	29.49	25.73
1/19/2010 0:00	25.94	24.56	23.90	23.86	24.39	26.73	40.51	53.70	49.84	51.13	50.19	45.25
1/19/2010 0:00	42.81	40.35	32.19	29.62	30.34	45.02	52.57	46.97	45.76	42.55	29.75	27.10
1/20/2010 0:00	24.90	24.19	23.27	23.05	23.52	25.24	33.28	47.54	47.38	47.45	47.31	46.83
1/20/2010 0:00	42.23	39.51	34.83	33.54	35.17	43.05	54.56	48.67	44.01	35.80	27.15	24.98
1/21/2010 0:00	23.20	21.56	21.51	21.36	21.90	23.16	28.57	36.58	34.92	35.81	36.58	36.68
1/21/2010 0:00	34.48	32.39	28.83	27.80	28.21	37.36	45.65	38.17	34.97	30.63	26.84	24.28
1/22/2010 0:00	23.63	22.20	22.23	22.15	22.78	25.03	31.78	45.53	41.51	40.82	41.54	38.74
1/22/2010 0:00	34.02	32.15	28.66	27.21	27.17	33.90	41.46	36.13	31.44	27.93	25.09	23.42
1/23/2010 0:00	22.55	21.77	21.09	20.12	20.28	20.51	22.86	25.44	26.58	33.18	30.36	28.30
1/23/2010 0:00	26.45	24.93	23.68	22.48	23.05	29.13	41.69	30.95	29.46	25.84	23.27	20.94
1/24/2010 0:00	19.78	18.32	18.21	17.43	17.46	17.21	17.80	20.00	20.71	22.53	23.67	23.54
1/24/2010 0:00	23.59	22.85	21.58	20.82	21.92	28.73	37.20	33.52	32.00	26.94	23.39	20.42
1/25/2010 0:00	19.20	17.96	18.63	18.15	19.46	22.75	28.40	36.81	33.75	37.74	38.13	37.39
1/25/2010 0:00	34.08	31.24	29.35	27.43	29.13	37.98	51.98	46.94	39.72	34.61	27.36	23.71
1/26/2010 0:00	23.49	22.42	22.33	22.17	22.68	26.49	37.04	50.59	47.06	47.35	48.08	48.12
1/26/2010 0:00	45.49	43.89	38.99	34.41	38.18	50.48	69.42	63.66	54.08	49.39	39.55	30.19
1/27/2010 0:00	28.11	26.56	26.30	26.00	26.59	28.74	45.29	63.06	57.51	56.88	51.99	48.59
1/27/2010 0:00	47.51	41.58	34.65	31.39	32.13	49.84	67.64	57.59	51.60	42.76	35.15	27.81
1/28/2010 0:00	26.18	25.50	24.85	24.48	25.67	28.32	38.80	49.94	48.73	48.74	48.78	47.38
1/28/2010 0:00	45.70	41.70	36.83	33.36	34.35	47.36	59.99	55.11	51.06	47.84	41.56	38.74
1/29/2010 0:00	32.23	30.52	30.30	29.73	30.93	35.41	48.61	68.54	57.48	56.97	54.99	50.23
1/29/2010 0:00	48.13	47.68	40.36	34.76	35.16	48.05	64.78	57.18	51.29	46.31	39.00	34.23
1/30/2010 0:00	33.99	33.53	32.27	30.50	30.01	29.79	33.95	39.81	42.65	51.63	53.38	47.00
1/30/2010 0:00	41.59	37.66	32.73	30.35	30.48	42.03	63.73	54.62	49.32	40.70	36.14	34.84
1/31/2010 0:00	33.09	32.10	30.81	29.82	29.22	28.76	30.23	32.89	35.18	42.46	41.55	39.03
1/31/2010 0:00	35.11	32.14	29.21	28.36	28.60	40.11	59.71	50.35	47.17	41.35	36.56	31.09

Day Ahead System Lambda with LMP

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
2/1/2010 0:00	27.35	27.18	26.80	26.79	27.35	28.96	47.24	66.28	57.63	54.53	49.45	47.67
2/1/2010 0:00	43.76	40.50	35.56	32.31	33.44	41.50	64.85	57.90	48.49	45.93	34.08	29.82
2/2/2010 0:00	27.68	26.75	26.19	26.21	26.91	28.39	43.75	55.70	49.56	49.04	47.36	46.18
2/2/2010 0:00	42.57	39.17	34.29	31.05	31.98	38.88	56.04	50.73	46.02	43.37	33.99	30.09
2/3/2010 0:00	26.71	25.94	24.78	24.52	25.11	26.80	38.34	49.37	45.40	42.67	42.56	39.67
2/3/2010 0:00	36.36	33.90	30.94	29.00	29.97	35.03	49.68	49.77	45.70	40.28	31.28	28.55
2/4/2010 0:00	27.14	25.43	25.21	25.11	25.34	28.66	42.91	53.19	49.59	48.61	46.89	46.05
2/4/2010 0:00	41.58	36.49	34.56	32.11	32.08	37.10	50.08	48.79	45.70	40.46	30.22	28.01
2/5/2010 0:00	25.46	24.63	24.19	24.03	24.09	24.83	30.58	47.05	41.66	44.09	42.20	41.54
2/5/2010 0:00	41.37	37.76	33.62	30.42	30.04	32.78	44.23	41.64	41.49	34.37	27.97	27.15
2/6/2010 0:00	28.34	27.94	26.95	26.30	26.20	27.12	28.41	33.78	37.36	44.71	49.14	46.15
2/6/2010 0:00	41.67	34.16	32.59	30.61	31.05	39.74	56.23	54.25	53.48	46.84	38.64	33.85
2/7/2010 0:00	33.10	31.82	30.81	29.89	29.70	28.65	30.33	33.79	34.81	38.40	38.55	37.43
2/7/2010 0:00	35.68	33.44	30.79	29.62	31.06	38.43	49.51	51.55	48.41	44.25	37.68	31.99
2/8/2010 0:00	28.25	28.41	28.51	28.16	28.56	31.34	48.05	58.51	52.39	52.03	52.05	50.66
2/8/2010 0:00	46.66	40.69	36.42	33.44	35.25	41.60	67.02	61.72	52.15	47.43	33.91	30.96
2/9/2010 0:00	27.80	26.92	26.29	26.30	27.09	30.15	41.26	52.02	49.19	47.85	50.07	50.50
2/9/2010 0:00	45.16	41.07	38.16	33.98	35.35	40.95	56.40	52.56	47.24	41.08	34.73	29.65
2/10/2010 0:00	27.89	27.44	27.27	27.12	27.88	31.48	46.72	55.62	52.70	52.62	52.44	50.89
2/10/2010 0:00	48.09	42.95	38.51	34.07	34.94	40.56	63.24	64.71	51.17	45.20	40.29	33.15
2/11/2010 0:00	31.97	30.76	29.20	29.12	30.06	33.49	49.85	58.26	57.89	57.24	53.91	49.76
2/11/2010 0:00	46.02	40.69	37.74	33.60	33.55	38.13	57.87	62.43	51.26	42.26	41.40	37.94
2/12/2010 0:00	29.16	28.44	27.48	27.42	27.90	28.57	40.54	54.46	52.01	50.48	49.46	44.18
2/12/2010 0:00	40.52	36.64	34.45	30.26	29.63	32.08	47.63	47.99	43.45	36.81	33.43	30.66
2/13/2010 0:00	29.35	29.73	28.16	27.84	27.35	27.53	29.65	34.24	37.28	41.48	42.31	39.47
2/13/2010 0:00	36.44	31.74	29.86	28.37	28.84	31.09	42.69	42.58	40.84	37.33	32.14	28.84
2/14/2010 0:00	31.35	33.02	31.45	29.68	28.58	28.21	29.38	28.47	28.30	31.02	30.46	30.09
2/14/2010 0:00	29.27	28.39	25.65	25.21	25.43	28.51	40.95	43.43	39.96	34.77	28.62	26.85
2/15/2010 0:00	25.48	25.14	24.94	24.69	25.23	26.53	36.17	49.15	48.81	50.26	50.26	50.21
2/15/2010 0:00	46.63	41.35	37.90	32.94	33.39	38.44	57.79	63.44	50.22	45.22	35.00	29.26
2/16/2010 0:00	26.58	26.41	26.34	26.20	26.78	29.03	41.50	50.27	47.22	47.85	47.30	40.11
2/16/2010 0:00	37.86	35.95	32.43	30.10	30.31	32.09	48.89	55.44	48.70	38.54	33.10	28.68
2/17/2010 0:00	26.44	27.00	26.43	26.31	27.31	29.46	39.21	53.91	53.00	53.00	53.03	53.24
2/17/2010 0:00	42.86	41.65	36.00	31.24	33.00	37.69	53.39	62.17	52.55	50.24	38.89	30.07
2/18/2010 0:00	27.59	26.97	26.71	26.54	27.30	29.58	37.70	53.31	51.16	51.27	51.28	47.33
2/18/2010 0:00	41.44	37.90	33.74	29.85	29.64	33.32	50.97	54.25	51.44	41.62	32.11	28.60
2/19/2010 0:00	27.32	26.75	26.10	26.06	26.81	28.66	39.25	51.17	48.34	47.74	48.11	42.78
2/19/2010 0:00	42.78	38.49	34.57	30.43	30.47	34.65	48.48	50.76	48.48	40.99	34.85	30.71
2/20/2010 0:00	29.37	28.39	27.56	26.21	25.92	27.24	28.82	31.19	36.10	44.53	46.16	43.03
2/20/2010 0:00	34.80	30.05	29.16	27.45	27.83	30.01	40.39	46.18	40.48	36.79	31.43	28.19
2/21/2010 0:00	25.21	25.41	24.41	23.57	22.93	23.37	24.68	24.94	25.86	28.17	28.16	27.98
2/21/2010 0:00	27.48	26.71	25.87	24.93	25.48	29.04	39.95	44.89	38.46	31.15	26.48	24.90
2/22/2010 0:00	23.49	23.66	23.02	22.99	23.41	25.06	36.24	48.21	47.64	48.64	47.76	46.85
2/22/2010 0:00	42.68	41.66	37.91	34.46	36.53	41.58	56.61	63.31	50.90	41.79	32.36	27.63
2/23/2010 0:00	27.02	26.34	26.00	26.01	26.48	28.91	39.85	47.57	46.55	47.35	45.03	41.33
2/23/2010 0:00	37.78	34.18	33.09	30.03	30.12	33.77	47.19	54.34	45.05	39.08	32.17	28.88
2/24/2010 0:00	27.09	26.64	26.40	26.40	26.99	30.87	37.56	50.19	48.34	48.92	47.60	45.89
2/24/2010 0:00	41.59	40.47	37.53	32.63	32.72	35.21	50.37	58.18	47.87	44.93	36.84	31.00
2/25/2010 0:00	29.48	29.50	28.47	28.27	28.63	31.67	44.01	51.23	45.47	45.23	45.07	45.13
2/25/2010 0:00	41.06	42.19	38.13	32.78	32.28	36.84	49.04	58.43	49.42	45.12	38.27	37.15
2/26/2010 0:00	34.13	33.00	30.75	29.96	30.24	30.69	41.13	51.20	48.79	47.17	46.37	44.19
2/26/2010 0:00	40.53	37.56	34.42	31.00	30.58	32.50	45.49	46.72	44.19	37.66	37.05	31.73
2/27/2010 0:00	32.75	32.91	31.93	31.07	29.76	30.73	32.78	35.73	45.22	50.29	49.30	45.18
2/27/2010 0:00	39.07	34.62	30.98	29.66	29.76	32.53	49.21	51.34	47.70	45.18	38.29	31.56
2/28/2010 0:00	32.64	32.61	32.01	30.54	29.43	30.34	31.49	33.97	37.74	43.95	41.72	40.93
2/28/2010 0:00	35.87	35.39	32.86	31.03	31.25	33.99	45.14	50.68	47.11	44.82	36.75	31.02

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
3/1/2010 0:00	29.38	28.46	27.92	27.77	28.19	33.37	43.86	51.72	54.79	58.17	53.04	53.35
3/1/2010 0:00	49.01	46.73	42.97	39.40	36.80	36.30	54.54	61.85	52.62	44.83	36.67	35.12
3/2/2010 0:00	31.65	30.10	29.61	29.39	30.01	35.33	46.79	49.66	52.75	52.63	54.10	51.71
3/2/2010 0:00	47.07	44.70	43.12	39.50	34.71	38.26	49.63	61.79	48.57	44.81	37.23	35.05
3/3/2010 0:00	30.39	29.09	28.78	28.44	30.01	34.83	46.40	46.53	46.90	46.49	45.43	44.46
3/3/2010 0:00	40.50	37.86	35.84	32.24	31.99	34.54	44.50	48.72	44.46	41.67	34.41	32.13
3/4/2010 0:00	31.36	30.09	30.78	30.53	31.87	37.75	51.25	52.88	51.85	51.17	52.07	48.64
3/4/2010 0:00	44.26	42.17	37.68	31.94	31.42	32.99	44.25	53.73	48.35	42.99	34.62	31.31
3/5/2010 0:00	29.38	27.85	27.91	27.94	28.72	31.29	40.99	44.30	45.00	44.41	42.86	40.78
3/5/2010 0:00	35.88	31.51	29.20	27.29	26.67	27.49	33.83	41.88	37.51	32.40	27.60	27.56
3/6/2010 0:00	30.78	29.38	29.08	27.11	26.98	27.72	29.56	29.91	34.60	36.03	34.74	30.98
3/6/2010 0:00	27.41	25.35	24.66	24.11	24.04	25.11	29.00	35.24	30.56	29.07	25.73	25.21
3/7/2010 0:00	25.72	25.63	25.40	24.59	24.41	24.77	26.27	24.93	25.37	26.06	25.73	25.37
3/7/2010 0:00	24.62	24.17	23.32	22.57	23.07	24.45	31.17	40.04	33.22	29.05	24.15	22.63
3/8/2010 0:00	22.34	21.88	21.82	22.09	22.84	25.71	41.10	35.50	38.78	40.02	37.04	36.00
3/8/2010 0:00	34.17	31.17	27.83	26.24	25.83	26.73	32.33	41.67	35.57	28.54	24.11	23.30
3/9/2010 0:00	22.50	21.91	21.92	22.17	23.51	27.87	39.11	35.53	36.54	35.68	35.60	34.62
3/9/2010 0:00	33.20	30.62	28.75	27.45	27.20	28.35	33.92	40.28	34.50	28.50	24.48	23.11
3/10/2010 0:00	22.03	21.20	21.26	21.16	22.33	26.45	39.75	36.06	40.24	40.39	40.40	38.17
3/10/2010 0:00	38.94	35.96	32.64	29.54	28.99	31.32	41.95	48.28	41.27	34.62	26.11	23.02
3/11/2010 0:00	20.81	19.72	19.58	19.58	20.06	24.29	35.85	33.70	30.95	30.86	30.26	32.06
3/11/2010 0:00	31.36	30.83	29.13	27.23	26.87	27.37	33.95	37.98	33.70	28.61	23.96	22.16
3/12/2010 0:00	18.99	18.84	19.78	19.78	20.77	24.28	31.87	36.60	39.52	39.51	40.27	38.44
3/12/2010 0:00	40.33	36.63	34.04	29.23	28.42	28.61	36.60	40.04	35.20	28.21	23.39	21.36
3/13/2010 0:00	21.58	21.70	21.37	20.85	20.69	21.37	24.32	25.37	29.12	29.71	30.05	29.31
3/13/2010 0:00	28.54	27.83	26.84	25.94	25.85	27.31	31.15	39.43	29.65	27.66	25.39	22.36
3/14/2010 0:00	22.55	21.93	22.21	22.09	21.96	23.02	25.36	24.77	25.58	26.95	27.47	27.33
3/14/2010 0:00	26.94	26.92	25.72	25.60	26.62	28.69	34.32	47.72	35.22	28.80	24.60	22.19
3/15/2010 0:00	22.11	21.67	21.74	22.07	23.44	41.74	49.49	39.81	40.23	41.08	39.23	38.78
3/15/2010 0:00	38.60	36.62	35.18	33.30	30.65	30.83	39.40	50.11	38.39	29.57	26.62	23.80
3/16/2010 0:00	22.00	22.84	23.50	23.61	26.07	34.26	41.84	41.05	39.56	39.55	39.44	38.58
3/16/2010 0:00	39.36	33.17	29.83	28.09	27.84	27.94	35.06	41.89	36.78	27.54	24.57	23.26
3/17/2010 0:00	24.49	23.88	24.53	24.63	27.70	39.05	45.18	40.00	40.84	40.03	40.09	39.95
3/17/2010 0:00	37.41	33.71	31.62	28.82	28.06	28.00	33.32	39.86	33.71	28.93	26.55	23.96
3/18/2010 0:00	22.77	22.10	23.31	23.72	25.07	35.28	42.94	38.63	37.56	37.47	37.47	35.40
3/18/2010 0:00	32.54	30.35	27.97	27.12	26.85	26.28	30.16	40.80	32.20	27.02	23.47	21.51
3/19/2010 0:00	21.04	20.44	20.54	21.46	23.04	31.42	37.68	34.80	34.41	33.97	32.00	30.75
3/19/2010 0:00	30.87	29.03	27.95	25.91	25.17	24.56	27.54	36.01	30.56	25.77	22.39	21.37
3/20/2010 0:00	21.93	21.56	21.49	21.24	21.56	23.87	28.00	29.93	34.30	37.27	37.79	37.58
3/20/2010 0:00	34.08	30.03	27.62	27.06	27.31	28.58	32.45	39.58	36.55	30.02	24.05	23.78
3/21/2010 0:00	22.97	21.99	22.75	22.08	22.08	24.30	26.01	25.83	27.79	28.13	28.30	27.70
3/21/2010 0:00	27.58	25.71	24.69	24.97	25.81	27.24	31.72	42.07	35.63	28.78	23.96	22.45
3/22/2010 0:00	22.86	22.62	22.93	23.33	25.96	34.74	44.40	42.66	42.10	41.32	40.54	38.09
3/22/2010 0:00	35.69	32.53	32.08	29.50	28.74	29.24	34.30	45.23	36.22	28.03	24.99	23.30
3/23/2010 0:00	23.79	23.07	23.11	23.77	26.64	35.53	46.89	38.49	37.61	37.52	37.23	36.83
3/23/2010 0:00	34.32	32.40	28.66	26.85	26.41	26.23	27.88	38.64	31.83	27.30	24.57	23.13
3/24/2010 0:00	23.21	22.81	22.70	23.13	25.72	34.66	46.28	39.21	39.25	38.27	39.38	36.53
3/24/2010 0:00	34.79	33.19	29.30	27.95	26.83	26.47	28.98	38.63	33.96	27.84	23.54	22.22
3/25/2010 0:00	22.90	21.97	22.12	22.39	25.64	37.40	43.67	36.61	36.49	35.43	36.42	34.28
3/25/2010 0:00	33.18	30.87	29.00	27.81	28.03	29.21	33.67	43.37	38.97	28.35	26.31	25.17
3/26/2010 0:00	25.21	22.74	23.52	23.52	26.79	39.59	50.40	41.29	41.01	40.68	38.54	33.73
3/26/2010 0:00	32.99	31.07	27.59	30.49	28.15	27.51	31.49	46.71	36.13	28.87	26.75	25.97
3/27/2010 0:00	26.68	25.80	25.49	25.19	25.67	28.08	31.13	28.98	34.02	35.18	33.42	29.00
3/27/2010 0:00	26.91	24.80	23.87	23.12	22.99	23.80	24.85	35.29	30.07	27.61	24.42	22.77
3/28/2010 0:00	21.22	21.26	21.22	21.05	21.25	21.73	24.88	24.59	25.58	26.12	26.51	25.80
3/28/2010 0:00	25.80	24.60	23.91	25.62	25.91	26.37	29.58	36.03	31.88	27.30	25.23	23.70
3/29/2010 0:00	21.95	21.84	21.93	21.75	24.64	35.71	46.32	44.97	41.19	40.19	40.91	37.71
3/29/2010 0:00	33.15	33.47	30.46	32.27	30.48	30.55	33.68	43.73	38.00	27.83	26.33	25.21
3/30/2010 0:00	23.70	22.44	22.11	23.08	25.55	37.64	49.84	36.58	36.76	37.53	37.27	32.96
3/30/2010 0:00	32.06	29.99	28.28	27.69	27.11	26.83	29.18	39.48	32.06	26.52	24.50	23.56
3/31/2010 0:00	21.06	19.56	19.87	20.22	21.73	34.86	38.46	30.75	32.42	34.80	35.30	32.54
3/31/2010 0:00	32.69	30.60	29.38	28.43	27.03	26.91	27.75	36.66	29.70	24.41	21.02	21.20

Day Ahead System Lambda with LMP

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
4/1/2010 0:00	18.89	17.64	17.64	18.45	22.23	34.84	33.57	31.50	32.41	33.14	32.88	32.60
4/1/2010 0:00	32.39	32.16	31.40	29.68	29.09	26.06	27.30	30.06	27.27	24.59	21.62	21.14
4/2/2010 0:00	17.38	14.11	13.74	14.79	16.23	28.23	25.72	26.77	27.56	28.57	28.73	28.08
4/2/2010 0:00	28.44	28.56	28.85	27.29	26.77	25.91	25.78	27.27	26.50	22.58	19.98	18.52
4/3/2010 0:00	16.53	15.42	14.21	13.15	14.05	15.61	21.92	23.80	26.19	26.47	26.29	26.50
4/3/2010 0:00	26.36	25.91	24.93	25.03	25.12	24.49	24.67	28.82	26.06	23.95	18.98	18.17
4/4/2010 0:00	18.76	18.04	15.05	14.51	15.62	18.92	22.19	22.77	23.12	23.28	23.84	23.42
4/4/2010 0:00	22.80	22.43	21.83	21.82	22.05	22.15	23.43	30.95	25.71	23.00	20.14	19.44
4/5/2010 0:00	19.26	18.99	18.48	19.22	20.04	34.89	33.31	34.84	40.65	39.99	37.99	38.63
4/5/2010 0:00	39.14	39.41	36.04	34.29	35.08	28.65	29.13	37.13	31.54	25.63	24.11	21.73
4/6/2010 0:00	18.32	17.07	16.76	17.04	19.92	31.61	32.88	31.94	33.35	36.69	38.58	41.25
4/6/2010 0:00	46.26	46.12	42.94	45.64	44.81	36.55	33.80	42.07	37.66	26.10	20.10	19.61
4/7/2010 0:00	18.41	16.51	15.57	16.43	18.98	25.21	27.76	28.11	30.94	32.85	33.60	33.52
4/7/2010 0:00	36.74	37.26	34.45	34.91	33.72	28.66	28.95	33.78	31.28	25.98	21.64	19.52
4/8/2010 0:00	18.81	17.99	17.74	17.83	19.47	28.05	36.55	41.27	41.72	42.57	42.10	42.17
4/8/2010 0:00	42.89	41.80	35.80	34.77	32.69	30.14	32.29	41.97	39.77	28.14	22.96	21.26
4/9/2010 0:00	21.58	20.25	20.13	20.60	23.58	35.41	36.47	35.23	35.95	35.27	34.38	31.49
4/9/2010 0:00	32.22	30.15	26.14	25.36	24.51	23.66	24.28	34.30	30.88	25.18	23.29	23.09
4/10/2010 0:00	21.30	20.99	21.03	20.87	21.39	23.60	24.92	28.96	34.65	35.78	34.59	35.55
4/10/2010 0:00	30.16	27.51	25.43	25.11	25.46	25.19	26.04	36.62	35.06	27.72	23.01	20.99
4/11/2010 0:00	21.07	20.73	20.49	20.47	20.55	21.12	21.75	23.46	25.84	26.39	26.96	26.52
4/11/2010 0:00	25.94	25.27	24.61	24.61	25.01	25.32	26.83	37.20	31.36	26.10	22.99	20.73
4/12/2010 0:00	20.75	20.50	20.55	20.94	23.98	35.85	36.16	40.04	42.36	42.80	42.35	43.67
4/12/2010 0:00	43.58	41.78	36.88	34.48	32.27	28.10	28.40	39.43	36.69	25.76	24.40	21.22
4/13/2010 0:00	21.07	20.17	20.03	20.29	23.12	32.71	34.31	36.70	37.27	38.84	38.87	40.08
4/13/2010 0:00	41.04	41.39	36.82	35.35	33.16	28.80	29.01	39.64	36.14	26.24	23.62	21.07
4/14/2010 0:00	27.45	25.94	25.99	27.01	32.32	44.76	40.52	39.57	40.27	42.75	41.41	42.54
4/14/2010 0:00	41.60	42.02	42.04	42.27	41.96	34.66	35.00	42.31	41.70	29.48	25.12	22.49
4/15/2010 0:00	20.45	19.79	19.71	19.94	22.51	36.74	35.70	36.42	38.47	40.74	43.37	44.83
4/15/2010 0:00	45.03	45.79	44.74	43.95	43.28	39.42	38.19	47.30	42.95	31.53	24.95	21.22
4/16/2010 0:00	23.04	21.28	21.10	21.36	24.41	37.33	37.13	43.09	40.31	42.74	42.45	41.21
4/16/2010 0:00	41.17	39.33	35.16	34.58	34.24	27.84	27.47	40.61	36.66	27.30	23.44	23.04
4/17/2010 0:00	23.93	22.89	22.39	22.36	23.05	24.78	26.24	35.68	41.35	40.12	39.64	36.28
4/17/2010 0:00	33.93	29.63	27.61	26.72	26.96	26.61	27.33	43.35	39.50	34.57	24.33	23.68
4/18/2010 0:00	24.33	23.66	23.32	23.20	22.77	24.25	24.87	25.59	28.31	30.14	29.93	29.15
4/18/2010 0:00	28.05	27.44	25.97	25.71	26.46	27.27	28.95	46.52	41.29	29.63	23.92	22.86
4/19/2010 0:00	22.75	21.95	21.96	22.65	24.52	37.66	42.24	42.33	44.29	44.85	44.60	44.11
4/19/2010 0:00	44.02	44.84	39.89	36.37	34.20	30.22	29.38	42.53	42.07	29.92	25.07	23.28
4/20/2010 0:00	22.80	22.00	22.05	22.51	24.15	35.19	42.44	42.56	43.65	44.03	43.87	44.11
4/20/2010 0:00	44.25	44.02	43.76	42.16	38.36	33.06	29.22	44.49	44.02	32.83	26.01	23.65
4/21/2010 0:00	21.99	20.98	20.85	21.23	22.44	32.21	36.36	35.27	37.67	40.63	39.44	38.43
4/21/2010 0:00	38.23	36.39	32.94	34.17	30.86	27.90	26.19	38.53	36.95	27.10	23.26	21.54
4/22/2010 0:00	21.95	21.37	21.37	21.55	23.17	29.35	37.75	45.50	45.40	45.08	44.70	44.67
4/22/2010 0:00	44.81	45.04	43.95	38.44	36.14	29.80	28.01	41.01	41.41	29.38	24.84	22.77
4/23/2010 0:00	21.97	20.70	20.59	21.22	22.61	34.72	37.66	35.52	39.33	41.40	41.84	43.21
4/23/2010 0:00	42.45	41.19	34.06	33.69	34.08	29.79	29.42	45.89	33.95	29.00	23.19	21.08
4/24/2010 0:00	19.74	18.72	18.80	19.19	19.75	21.09	22.92	25.10	26.99	28.63	29.78	28.18
4/24/2010 0:00	27.83	26.39	25.61	25.55	25.80	25.22	24.55	35.80	27.45	24.97	21.24	20.00
4/25/2010 0:00	18.41	17.59	16.73	16.38	16.28	18.46	20.08	23.63	24.70	24.78	24.85	23.82
4/25/2010 0:00	23.92	23.84	23.68	23.85	24.59	24.79	25.06	36.30	26.34	23.02	19.90	18.73
4/26/2010 0:00	16.51	15.95	15.73	16.09	21.01	25.81	28.18	29.54	31.70	39.46	38.52	38.04
4/26/2010 0:00	38.32	36.20	30.14	28.59	27.94	26.27	25.98	34.41	32.25	24.59	21.44	19.47
4/27/2010 0:00	22.00	20.90	20.91	21.02	24.14	37.37	42.95	42.67	42.93	43.13	43.13	45.62
4/27/2010 0:00	44.46	43.17	42.26	37.05	33.20	29.17	29.55	40.77	43.04	28.92	23.59	22.78
4/28/2010 0:00	21.07	19.89	19.90	20.33	22.18	31.02	32.54	33.38	31.27	31.53	31.20	30.11
4/28/2010 0:00	28.83	28.41	25.97	25.15	24.34	23.47	23.26	28.64	27.00	22.51	21.71	19.13
4/29/2010 0:00	17.39	16.69	17.02	19.11	21.99	28.68	28.34	28.39	29.94	31.76	31.26	31.82
4/29/2010 0:00	30.87	31.12	28.77	28.04	26.91	25.89	25.66	33.30	37.45	24.34	21.55	20.19
4/30/2010 0:00	19.95	18.86	18.95	19.50	22.52	28.22	29.79	32.40	37.58	43.01	45.24	47.42
4/30/2010 0:00	49.05	48.29	47.98	48.64	39.42	33.33	27.91	36.26	39.94	26.33	22.83	21.91

Day Ahead System Lambda with LMP

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
5/1/2010 0:00	20.37	18.92	18.44	18.18	18.39	19.12	22.97	26.03	29.69	31.30	33.85	35.36
5/1/2010 0:00	34.02	31.35	30.84	31.03	31.45	30.10	28.03	38.19	39.11	28.41	21.24	21.10
5/2/2010 0:00	21.08	20.03	19.01	18.64	18.79	19.47	22.21	23.57	25.88	27.51	28.46	28.72
5/2/2010 0:00	28.99	28.55	28.43	28.32	28.83	28.43	28.40	37.23	39.55	29.17	22.02	21.18
5/3/2010 0:00	18.71	18.31	17.65	17.93	19.99	24.00	26.18	31.15	33.88	39.06	40.18	41.34
5/3/2010 0:00	41.41	41.21	41.01	40.76	37.34	32.04	29.25	36.16	40.22	26.45	23.22	21.10
5/4/2010 0:00	20.48	19.55	18.96	19.20	20.31	23.63	29.06	33.62	37.02	43.62	47.29	51.36
5/4/2010 0:00	53.04	51.37	50.08	46.57	46.36	40.51	33.93	45.00	45.64	32.01	22.91	21.90
5/5/2010 0:00	20.11	19.26	18.99	18.96	19.96	23.99	29.41	32.08	33.65	39.16	40.58	45.56
5/5/2010 0:00	46.56	46.83	47.18	50.59	49.42	43.21	33.87	43.71	46.91	29.75	22.94	20.72
5/6/2010 0:00	21.30	20.45	20.13	20.42	21.65	25.83	29.63	34.79	36.84	41.76	43.39	43.51
5/6/2010 0:00	43.47	43.76	43.65	42.75	40.62	36.75	31.75	42.07	44.39	28.12	24.10	21.67
5/7/2010 0:00	21.00	20.36	20.04	20.36	21.06	24.22	29.32	33.55	35.18	38.35	37.15	37.62
5/7/2010 0:00	39.29	41.63	41.66	37.03	32.00	29.08	27.90	31.05	35.98	26.28	21.18	20.41
5/8/2010 0:00	20.44	20.04	19.15	18.91	19.14	21.37	23.97	29.53	30.08	31.53	32.88	33.74
5/8/2010 0:00	30.37	29.40	28.51	27.71	28.20	27.85	26.50	33.53	37.82	28.66	23.23	21.55
5/9/2010 0:00	20.35	19.87	19.33	19.16	19.72	20.16	21.56	24.31	24.72	24.88	24.83	24.46
5/9/2010 0:00	24.44	23.94	23.58	23.37	23.56	23.68	23.90	26.83	35.18	24.77	19.91	18.58
5/10/2010 0:00	18.07	17.63	17.59	18.27	20.77	23.11	28.40	30.81	32.22	34.93	34.03	33.78
5/10/2010 0:00	32.95	32.16	30.12	26.94	26.52	25.82	25.13	27.90	33.66	23.91	19.83	18.16
5/11/2010 0:00	18.18	17.52	17.24	17.77	20.04	22.91	26.49	30.41	32.42	34.57	34.68	34.73
5/11/2010 0:00	34.63	34.94	35.46	31.79	30.16	29.49	28.06	30.23	36.88	26.93	22.32	20.67
5/12/2010 0:00	20.35	19.49	19.12	19.25	20.15	22.72	28.90	31.52	36.23	37.21	37.03	37.85
5/12/2010 0:00	35.71	35.46	36.94	33.61	31.93	28.05	25.59	31.25	37.17	24.73	21.80	20.29
5/13/2010 0:00	20.81	20.37	19.98	20.26	22.02	25.75	33.63	37.85	42.85	43.13	44.32	44.33
5/13/2010 0:00	43.34	44.45	44.96	46.13	43.44	39.85	35.08	40.67	42.01	34.23	24.23	20.85
5/14/2010 0:00	21.38	20.40	20.34	20.52	21.47	24.26	29.95	35.38	39.76	41.41	43.37	43.75
5/14/2010 0:00	42.82	41.14	39.99	37.83	35.60	31.71	29.76	32.04	37.12	30.19	23.97	21.93
5/15/2010 0:00	22.60	21.20	20.44	20.39	20.66	21.50	22.94	27.87	30.25	32.19	33.73	31.88
5/15/2010 0:00	31.09	29.20	28.84	28.13	28.69	28.40	27.33	29.07	35.22	27.54	23.25	21.11
5/16/2010 0:00	20.49	19.81	19.17	19.18	19.61	19.81	21.60	23.66	24.72	24.86	25.72	26.17
5/16/2010 0:00	26.07	25.86	25.62	25.56	26.66	26.81	27.21	29.69	37.29	26.88	22.34	21.04
5/17/2010 0:00	20.45	19.53	19.32	20.05	21.44	24.61	29.99	37.38	41.36	45.62	45.42	45.44
5/17/2010 0:00	46.54	45.19	45.01	42.11	39.59	34.82	33.10	35.11	42.94	31.89	23.67	21.59
5/18/2010 0:00	21.88	20.94	20.85	21.41	22.28	24.92	30.34	37.62	41.02	43.92	45.85	45.28
5/18/2010 0:00	44.71	42.75	42.25	39.41	37.04	32.56	30.43	31.79	38.71	28.34	23.81	21.19
5/19/2010 0:00	20.31	19.23	19.15	19.54	20.91	23.69	26.14	29.30	32.54	34.16	34.59	35.09
5/19/2010 0:00	35.41	34.01	33.84	32.84	31.58	29.26	27.32	28.21	32.14	26.63	23.50	21.71
5/20/2010 0:00	21.18	19.89	19.57	19.90	20.95	24.94	28.65	30.87	35.60	37.02	38.04	40.31
5/20/2010 0:00	41.24	40.76	40.33	41.59	38.49	34.29	30.11	30.22	36.76	29.73	24.83	22.24
5/21/2010 0:00	21.30	20.18	19.79	20.05	21.12	24.27	29.68	33.47	38.28	41.10	43.82	42.42
5/21/2010 0:00	43.50	42.27	41.52	40.99	39.84	35.22	31.88	32.36	36.08	30.72	25.26	23.00
5/22/2010 0:00	22.80	21.29	20.39	19.97	20.12	20.45	22.00	24.03	25.55	27.61	30.12	30.96
5/22/2010 0:00	31.66	33.02	34.31	35.57	37.38	36.67	32.15	31.40	38.42	27.97	24.17	22.15
5/23/2010 0:00	20.48	19.37	18.23	17.62	17.96	18.01	20.98	22.82	25.59	28.35	31.96	34.05
5/23/2010 0:00	37.25	43.10	46.77	48.52	49.88	52.06	48.16	46.06	51.36	42.49	27.66	24.46
5/24/2010 0:00	20.80	19.39	18.61	18.51	19.64	22.23	26.52	28.47	32.96	36.88	41.75	46.59
5/24/2010 0:00	53.03	59.73	61.51	63.62	59.88	56.47	49.31	46.44	49.58	40.74	27.39	24.19
5/25/2010 0:00	22.94	20.62	19.64	19.72	20.37	23.28	30.11	35.19	38.00	44.28	49.42	57.64
5/25/2010 0:00	65.60	71.87	73.40	74.69	71.47	67.10	59.27	55.81	55.85	42.86	30.94	26.86
5/26/2010 0:00	23.37	21.29	20.06	19.88	20.46	23.56	28.41	35.05	36.01	41.52	46.77	53.78
5/26/2010 0:00	61.73	75.92	82.71	84.03	70.26	65.42	55.59	50.59	51.08	38.71	27.35	24.49
5/27/2010 0:00	20.69	19.36	18.70	18.56	19.11	21.12	23.83	27.24	31.80	35.97	39.34	43.98
5/27/2010 0:00	51.47	59.56	59.30	57.27	54.11	49.97	39.42	36.34	36.17	29.23	23.55	20.37
5/28/2010 0:00	22.51	19.95	19.10	19.32	20.72	22.15	23.79	25.84	28.47	33.39	38.08	36.51
5/28/2010 0:00	43.17	48.13	47.39	48.79	45.62	40.45	32.52	29.90	33.77	27.80	24.00	22.90
5/29/2010 0:00	22.96	22.19	20.69	20.40	20.42	19.00	22.68	24.35	25.97	29.18	33.58	35.65
5/29/2010 0:00	39.20	43.63	46.52	49.33	51.30	47.00	42.30	37.43	43.89	31.97	24.94	23.56
5/30/2010 0:00	20.43	19.58	18.01	16.65	17.43	14.81	20.91	23.42	24.43	28.41	37.32	38.78
5/30/2010 0:00	44.54	44.77	48.47	52.41	55.51	51.25	44.53	40.39	44.30	33.34	25.46	23.26
5/31/2010 0:00	22.43	19.66	18.02	18.50	18.93	14.22	17.59	24.27	25.06	28.28	40.24	42.82
5/31/2010 0:00	43.56	44.70	46.54	46.96	48.37	44.71	37.02	33.45	45.82	30.27	23.69	22.27

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
6/1/2010 0:00	22.79	20.62	19.96	20.18	21.01	24.44	32.58	34.94	37.30	50.20	58.74	64.07
6/1/2010 0:00	68.43	70.87	71.43	75.66	71.66	64.22	60.38	55.84	58.38	39.66	26.39	24.51
6/2/2010 0:00	23.92	23.32	22.48	22.54	23.10	23.75	27.02	31.62	36.66	42.68	51.74	54.94
6/2/2010 0:00	59.34	62.86	66.15	66.20	64.65	56.35	52.18	38.27	53.18	37.83	30.30	27.16
6/3/2010 0:00	24.91	23.59	23.02	22.97	23.46	24.70	29.96	32.49	35.29	41.74	47.37	44.18
6/3/2010 0:00	48.13	51.21	50.54	51.95	49.76	45.60	41.63	37.31	41.80	32.42	25.85	24.42
6/4/2010 0:00	23.61	22.87	22.18	21.92	22.63	23.01	25.80	27.91	32.45	38.70	44.89	46.31
6/4/2010 0:00	50.96	53.80	54.07	54.53	53.45	44.48	40.93	37.94	42.10	32.62	27.38	25.16
6/5/2010 0:00	25.06	23.20	22.57	22.02	22.19	22.31	23.75	26.16	28.58	36.99	40.27	42.93
6/5/2010 0:00	43.20	45.12	46.59	45.02	45.94	43.06	40.40	35.45	39.91	32.79	26.92	24.27
6/6/2010 0:00	24.10	23.47	23.02	22.84	21.53	20.70	21.23	23.48	24.15	25.57	26.57	28.27
6/6/2010 0:00	28.49	29.64	31.06	31.45	31.27	29.18	28.57	27.35	31.42	25.91	23.37	22.10
6/7/2010 0:00	21.48	18.51	18.30	20.27	22.33	23.67	27.06	31.63	35.75	43.56	46.46	47.13
6/7/2010 0:00	47.78	46.82	46.89	47.65	45.77	44.09	40.29	37.01	44.33	31.01	25.58	23.89
6/8/2010 0:00	24.13	23.46	22.91	22.95	23.77	25.33	29.04	32.18	36.55	40.99	43.45	45.79
6/8/2010 0:00	45.85	44.75	44.68	44.70	44.95	41.96	39.15	37.70	40.58	33.03	28.02	25.62
6/9/2010 0:00	24.48	22.87	22.21	22.18	23.35	24.95	28.29	32.22	33.22	38.72	43.18	43.48
6/9/2010 0:00	44.08	47.23	48.66	49.12	46.86	43.00	40.59	38.26	43.35	35.49	27.80	24.96
6/10/2010 0:00	24.64	22.91	22.37	23.20	24.32	26.27	28.55	34.15	37.93	47.28	50.43	52.20
6/10/2010 0:00	52.50	54.27	55.74	50.49	54.53	51.00	50.17	46.29	50.08	37.51	27.42	25.57
6/11/2010 0:00	25.83	24.04	23.02	23.28	24.26	25.17	28.76	31.24	36.68	41.55	47.35	50.92
6/11/2010 0:00	52.05	57.63	55.53	60.63	55.41	54.89	48.64	46.98	48.25	44.79	32.96	30.85
6/12/2010 0:00	27.29	25.57	24.69	24.12	24.02	24.07	25.47	30.11	37.27	41.77	51.54	53.88
6/12/2010 0:00	58.75	61.97	64.98	70.57	68.39	65.04	56.71	50.49	52.70	45.50	33.74	31.60
6/13/2010 0:00	27.98	25.37	23.99	22.90	22.19	22.07	23.92	26.50	29.26	37.64	44.92	49.07
6/13/2010 0:00	53.62	52.50	62.96	62.52	64.79	58.52	53.56	48.71	50.50	42.38	33.06	27.62
6/14/2010 0:00	25.16	24.12	23.47	23.44	24.19	24.99	29.72	34.00	41.69	51.75	56.59	60.98
6/14/2010 0:00	67.88	72.96	68.36	67.40	64.11	57.79	52.40	52.11	51.25	38.33	28.54	26.12
6/15/2010 0:00	27.87	26.39	24.44	24.00	25.49	26.81	28.58	31.25	34.85	44.00	47.23	49.78
6/15/2010 0:00	51.39	52.23	53.91	55.08	53.47	50.24	47.45	46.88	51.12	40.05	35.83	29.05
6/16/2010 0:00	25.92	24.17	23.56	23.45	24.09	25.49	32.35	35.46	37.58	45.85	50.85	55.19
6/16/2010 0:00	61.59	66.19	66.91	70.10	67.97	59.47	52.51	47.13	49.52	43.14	32.08	27.37
6/17/2010 0:00	25.09	23.61	22.89	23.24	24.56	24.48	28.75	32.55	36.56	46.37	52.09	53.20
6/17/2010 0:00	60.04	68.44	69.26	71.04	69.98	62.93	53.04	50.36	51.00	42.90	31.74	26.80
6/18/2010 0:00	23.24	20.42	18.69	19.36	20.32	22.48	25.15	28.26	32.13	40.90	51.13	53.44
6/18/2010 0:00	58.80	69.82	74.66	80.97	73.65	64.05	56.55	49.82	50.94	41.26	31.96	28.27
6/19/2010 0:00	25.87	24.48	23.82	23.32	23.40	23.02	25.36	29.64	38.14	45.21	57.61	63.34
6/19/2010 0:00	66.89	72.20	72.50	77.59	73.39	69.27	61.34	53.92	53.57	43.33	31.36	28.11
6/20/2010 0:00	25.81	23.89	22.52	21.34	20.50	10.67	19.58	25.04	27.40	31.57	40.42	52.00
6/20/2010 0:00	56.31	63.64	70.41	73.73	76.66	66.23	52.77	48.95	51.80	41.49	30.63	28.76
6/21/2010 0:00	24.03	22.60	21.80	21.52	23.39	24.77	28.13	36.72	39.17	46.27	56.14	59.13
6/21/2010 0:00	67.11	77.25	79.92	87.12	80.40	70.68	61.22	55.38	55.90	48.40	33.82	31.45
6/22/2010 0:00	26.10	24.62	23.74	23.60	24.45	25.71	29.84	36.89	42.91	52.51	63.04	67.54
6/22/2010 0:00	74.88	85.34	89.73	98.43	90.06	83.57	73.11	67.06	68.75	55.75	42.64	35.61
6/23/2010 0:00	26.86	24.23	23.21	23.05	23.64	25.16	28.72	37.67	43.96	54.30	63.96	68.05
6/23/2010 0:00	77.54	84.88	88.50	96.68	86.94	79.67	72.46	65.84	64.08	50.82	38.05	31.15
6/24/2010 0:00	27.67	24.60	23.94	23.74	24.07	25.18	33.12	40.55	44.83	52.66	60.06	64.63
6/24/2010 0:00	73.73	77.42	83.63	88.65	81.07	73.69	63.96	53.25	53.67	45.33	31.04	25.14
6/25/2010 0:00	23.02	20.43	19.44	19.66	20.11	22.22	26.20	27.79	32.82	39.80	47.60	52.84
6/25/2010 0:00	56.92	62.98	68.65	72.93	67.42	61.69	51.63	44.50	45.67	37.66	28.73	26.98
6/26/2010 0:00	24.85	23.02	21.64	20.90	20.67	19.61	22.83	26.91	30.47	36.31	42.05	48.92
6/26/2010 0:00	53.50	57.23	61.28	71.54	67.57	62.59	55.54	49.25	49.41	41.95	32.16	28.41
6/27/2010 0:00	25.85	23.84	22.71	21.11	20.69	19.31	23.66	25.37	28.48	35.56	42.24	50.79
6/27/2010 0:00	54.73	59.10	64.27	69.67	69.00	63.16	58.57	53.69	52.88	44.32	35.24	28.93
6/28/2010 0:00	25.28	23.88	23.12	22.86	23.79	25.55	28.88	33.95	40.02	48.94	57.45	60.78
6/28/2010 0:00	66.93	72.84	75.39	76.19	68.08	63.74	54.03	48.70	48.49	42.17	30.22	27.72
6/29/2010 0:00	24.47	21.49	20.75	20.49	22.85	24.10	25.59	28.36	31.34	37.41	41.34	41.86
6/29/2010 0:00	47.27	49.35	49.32	48.65	48.03	43.47	42.33	37.27	36.93	30.10	24.42	23.74
6/30/2010 0:00	20.12	17.79	16.75	16.27	18.21	19.61	26.25	26.04	26.88	31.23	32.64	33.31
6/30/2010 0:00	36.24	38.53	40.21	40.91	41.50	38.71	33.15	29.20	29.56	26.17	21.95	20.95

Day Ahead System Lambda with LMP

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
7/1/2010 0:00	16.89	15.23	14.35	14.48	15.97	18.59	21.83	23.82	25.33	26.37	28.14	29.54
7/1/2010 0:00	32.74	36.62	36.92	37.87	36.22	36.83	31.06	26.69	31.33	27.53	21.97	20.25
7/2/2010 0:00	19.74	18.97	17.94	17.71	18.79	20.00	22.43	24.66	27.40	29.55	32.45	33.28
7/2/2010 0:00	37.67	44.25	44.23	43.88	43.33	41.32	35.55	30.98	31.59	29.94	25.52	23.78
7/3/2010 0:00	23.01	20.61	20.00	20.89	20.56	19.05	22.63	24.67	27.07	29.75	33.71	37.82
7/3/2010 0:00	43.43	47.29	55.83	62.54	61.17	57.02	47.93	41.64	43.39	38.35	32.21	25.78
7/4/2010 0:00	23.23	19.71	14.89	13.99	14.80	8.53	19.69	21.61	23.56	26.42	28.27	35.75
7/4/2010 0:00	43.57	46.42	54.56	55.80	55.43	52.56	48.53	39.85	43.75	37.77	30.80	26.32
7/5/2010 0:00	23.93	20.63	18.63	17.86	17.91	18.25	21.90	24.19	25.84	30.88	39.09	44.86
7/5/2010 0:00	49.18	50.98	56.43	59.13	60.20	56.50	48.41	42.10	43.95	36.61	26.78	24.44
7/6/2010 0:00	27.39	26.08	24.58	23.99	24.17	24.96	25.92	37.31	41.16	49.82	60.00	61.94
7/6/2010 0:00	65.98	76.26	75.46	86.37	85.55	76.21	67.92	59.69	60.65	50.42	36.76	33.81
7/7/2010 0:00	28.58	26.11	23.62	23.04	23.93	26.17	29.18	40.13	44.91	54.23	60.02	68.83
7/7/2010 0:00	76.57	87.34	94.23	96.55	94.19	83.75	73.47	59.75	58.58	53.26	37.85	35.91
7/8/2010 0:00	28.02	24.51	23.79	23.22	23.66	24.64	27.57	36.15	45.62	53.87	60.16	62.07
7/8/2010 0:00	68.71	75.24	75.79	79.16	73.19	66.78	60.57	54.95	52.64	40.76	32.09	29.39
7/9/2010 0:00	27.22	24.04	23.36	22.86	23.74	24.74	26.62	32.92	38.34	44.69	46.05	50.55
7/9/2010 0:00	55.54	55.74	58.38	61.15	55.32	51.21	44.46	37.66	39.74	34.36	27.98	26.00
7/10/2010 0:00	24.51	21.49	19.33	18.05	19.07	18.78	20.42	24.58	26.90	32.63	38.01	43.25
7/10/2010 0:00	47.17	50.12	53.48	58.64	56.65	52.40	46.86	38.80	41.62	35.80	29.13	25.56
7/11/2010 0:00	22.79	19.61	15.64	14.10	14.27	10.33	13.83	22.61	24.63	27.59	31.69	35.17
7/11/2010 0:00	40.30	42.63	48.29	48.56	51.90	47.94	45.06	38.96	44.47	37.55	28.64	25.44
7/12/2010 0:00	24.66	23.76	22.85	23.15	23.50	24.74	27.29	35.36	39.42	46.63	51.36	58.09
7/12/2010 0:00	66.25	70.35	71.25	71.97	64.15	59.77	50.58	44.49	46.41	36.18	28.39	25.59
7/13/2010 0:00	24.65	22.30	20.55	20.38	22.32	24.07	25.50	27.80	31.30	39.22	44.40	48.53
7/13/2010 0:00	55.52	58.50	60.61	63.80	59.70	53.56	44.79	41.17	44.66	36.40	28.66	25.80
7/14/2010 0:00	23.37	19.76	18.74	19.27	20.86	23.70	25.78	27.73	31.14	43.09	51.14	60.39
7/14/2010 0:00	64.53	75.05	76.86	84.01	80.92	72.57	62.24	57.83	61.17	46.22	32.21	28.21
7/15/2010 0:00	26.36	24.06	23.21	22.65	23.85	25.74	26.77	33.95	44.01	54.73	63.69	68.12
7/15/2010 0:00	78.33	86.58	90.16	94.85	88.64	81.56	71.27	66.05	65.11	53.00	41.68	35.86
7/16/2010 0:00	26.08	23.63	22.16	21.19	22.64	24.80	27.19	33.19	40.65	52.33	56.79	61.73
7/16/2010 0:00	67.39	80.59	81.62	81.88	79.51	69.13	60.16	54.30	54.28	40.12	30.03	27.61
7/17/2010 0:00	23.07	19.37	16.64	15.52	16.05	13.15	20.14	24.47	29.95	39.75	46.61	50.07
7/17/2010 0:00	54.56	62.13	66.49	71.47	69.13	63.73	56.27	46.79	51.77	40.37	29.39	26.50
7/18/2010 0:00	24.47	22.91	20.11	19.45	18.76	17.67	21.29	24.50	29.23	37.93	45.34	51.03
7/18/2010 0:00	57.17	64.02	72.25	76.76	74.29	68.87	60.32	50.56	56.70	44.88	31.74	25.02
7/19/2010 0:00	24.44	22.83	20.90	20.99	22.12	24.08	25.82	28.27	34.41	41.82	46.82	53.79
7/19/2010 0:00	60.38	63.10	64.12	72.99	70.07	60.37	55.12	47.57	48.14	38.96	28.77	24.89
7/20/2010 0:00	24.37	23.07	21.96	21.54	22.95	24.40	29.57	36.08	41.21	50.90	53.46	58.98
7/20/2010 0:00	65.45	72.60	75.99	82.12	81.12	70.88	63.24	57.15	61.24	47.52	36.20	29.20
7/21/2010 0:00	26.14	23.70	22.74	22.65	23.67	26.22	29.15	36.06	39.63	49.90	54.15	60.10
7/21/2010 0:00	65.50	71.38	77.24	79.92	82.22	66.67	59.77	52.89	55.49	42.70	31.54	31.39
7/22/2010 0:00	24.21	22.61	20.95	20.71	21.93	24.01	27.67	32.34	39.57	46.27	54.89	60.24
7/22/2010 0:00	65.48	67.20	75.39	83.56	75.16	67.46	63.91	56.95	61.02	47.04	33.43	28.89
7/23/2010 0:00	27.21	24.48	24.14	23.82	24.25	27.14	34.89	42.21	50.47	61.19	69.91	73.15
7/23/2010 0:00	81.53	86.76	95.64	100.31	89.93	79.78	74.39	67.08	70.69	56.64	39.88	35.13
7/24/2010 0:00	30.19	26.34	24.19	23.15	22.80	23.27	25.13	31.42	44.07	53.24	59.61	62.15
7/24/2010 0:00	70.14	72.46	78.52	89.98	82.18	71.88	64.01	55.23	55.25	45.66	34.99	30.40
7/25/2010 0:00	25.46	23.93	21.43	20.92	20.13	19.00	19.60	23.85	26.15	28.91	36.64	42.16
7/25/2010 0:00	43.62	48.09	52.26	52.77	52.82	49.48	48.17	40.56	45.05	36.93	25.57	23.40
7/26/2010 0:00	22.45	20.95	19.39	19.56	21.87	23.67	25.25	29.35	34.44	38.16	46.11	52.25
7/26/2010 0:00	61.15	63.57	72.42	81.40	75.91	64.83	56.30	49.57	49.69	38.41	28.22	23.79
7/27/2010 0:00	24.10	21.94	20.67	20.66	22.34	24.78	25.90	29.75	35.93	40.45	49.55	55.96
7/27/2010 0:00	62.93	68.64	75.92	88.84	77.84	69.26	63.14	54.61	57.97	43.54	31.67	29.29
7/28/2010 0:00	28.82	24.89	23.94	23.85	24.41	28.57	33.17	38.88	45.03	54.04	63.97	71.33
7/28/2010 0:00	78.12	82.05	90.14	100.03	89.59	80.64	71.00	63.76	66.85	51.35	38.02	32.27
7/29/2010 0:00	26.15	24.46	23.49	23.33	23.74	26.99	29.08	33.85	37.89	45.93	55.20	59.99
7/29/2010 0:00	66.12	68.96	76.53	80.37	72.77	65.60	58.58	50.72	50.10	37.97	30.13	27.40
7/30/2010 0:00	25.81	24.26	23.15	22.96	23.38	26.68	28.10	33.97	37.68	44.35	51.94	56.66
7/30/2010 0:00	62.90	65.26	70.14	74.20	68.37	63.89	56.99	49.35	49.35	42.39	31.37	26.40
7/31/2010 0:00	24.15	23.11	20.60	20.08	20.36	19.07	23.42	25.18	29.66	36.88	42.50	48.00
7/31/2010 0:00	49.74	56.88	58.69	69.51	64.87	56.86	49.96	44.56	48.76	37.36	28.55	25.46

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
8/1/2010 0:00	26.79	24.62	23.24	22.45	20.91	19.39	21.13	23.91	25.73	29.91	35.48	38.71
8/1/2010 0:00	47.92	51.89	54.03	61.97	63.71	56.50	47.79	42.24	45.26	36.61	28.53	24.99
8/2/2010 0:00	24.16	21.70	20.82	20.90	22.87	24.37	25.20	31.48	36.16	43.63	52.69	57.88
8/2/2010 0:00	64.26	69.09	75.72	89.01	79.05	70.67	62.77	59.32	63.33	46.82	34.42	29.18
8/3/2010 0:00	26.15	24.39	23.81	23.66	24.15	26.43	30.39	37.12	43.27	55.36	64.06	69.31
8/3/2010 0:00	78.05	82.10	93.76	100.69	93.95	81.61	74.14	67.40	69.35	54.19	39.27	33.14
8/4/2010 0:00	33.42	27.74	26.37	26.25	27.37	30.72	34.24	40.58	44.90	59.17	66.51	75.13
8/4/2010 0:00	82.07	86.41	100.54	103.76	90.24	80.86	74.19	67.79	70.51	52.07	43.41	39.69
8/5/2010 0:00	34.16	29.34	27.46	26.26	27.20	31.77	34.04	38.67	47.68	58.16	66.47	71.36
8/5/2010 0:00	77.86	80.72	90.75	91.43	84.44	77.40	67.52	62.84	62.93	46.67	37.28	30.82
8/6/2010 0:00	24.54	22.48	21.05	20.91	22.76	25.46	25.34	28.35	35.58	39.44	44.31	50.83
8/6/2010 0:00	58.17	59.81	63.96	65.22	58.75	50.47	43.45	39.92	39.86	33.58	28.18	24.32
8/7/2010 0:00	22.00	19.71	18.25	17.64	17.66	17.93	19.88	23.51	24.35	26.93	30.26	33.23
8/7/2010 0:00	35.14	39.35	43.04	47.85	47.35	44.96	38.67	34.99	33.62	28.03	23.55	22.91
8/8/2010 0:00	21.61	19.96	16.86	16.16	16.28	15.70	16.63	22.55	24.48	28.00	34.04	38.51
8/8/2010 0:00	46.10	51.80	53.50	60.22	67.82	62.22	51.93	52.83	59.20	43.86	31.64	26.92
8/9/2010 0:00	24.68	22.60	21.30	21.30	22.23	25.09	26.77	32.10	37.28	47.94	56.17	60.08
8/9/2010 0:00	67.21	74.11	80.55	89.59	85.43	74.37	66.60	61.60	63.17	47.83	33.18	28.11
8/10/2010 0:00	26.57	24.88	23.79	23.63	24.08	26.96	28.50	34.29	40.83	53.52	61.36	68.78
8/10/2010 0:00	76.68	82.01	91.35	94.42	87.83	78.99	68.37	64.94	67.05	52.00	41.62	34.59
8/11/2010 0:00	32.00	28.37	25.42	24.72	25.32	30.64	31.19	37.50	46.50	56.49	64.26	71.35
8/11/2010 0:00	81.33	88.77	93.44	96.11	88.14	81.72	71.18	68.35	69.61	51.71	42.50	35.16
8/12/2010 0:00	28.34	25.30	24.30	24.01	24.46	29.05	30.92	38.83	45.77	55.03	64.70	72.84
8/12/2010 0:00	83.51	88.17	93.91	106.22	91.72	84.01	75.49	75.09	71.69	54.15	40.15	35.45
8/13/2010 0:00	33.08	25.72	24.38	24.32	24.56	27.84	27.99	35.56	42.74	52.51	59.18	67.24
8/13/2010 0:00	75.77	79.82	84.36	95.30	83.24	74.95	66.66	63.28	61.29	48.56	35.11	30.80
8/14/2010 0:00	30.22	27.41	25.10	24.15	23.87	24.03	24.59	26.30	31.73	39.04	48.25	52.09
8/14/2010 0:00	54.91	60.26	65.51	73.28	68.96	60.78	52.98	49.83	49.42	35.84	29.32	30.07
8/15/2010 0:00	27.92	24.50	23.42	22.20	21.16	21.06	21.00	24.53	26.43	29.22	35.02	43.33
8/15/2010 0:00	46.28	48.19	56.48	58.36	57.85	52.26	42.86	45.63	45.94	31.92	29.40	25.60
8/16/2010 0:00	23.95	21.83	20.29	20.75	22.02	24.89	27.67	29.06	33.46	39.47	47.65	49.77
8/16/2010 0:00	55.51	61.22	65.81	67.66	62.99	56.47	48.40	46.24	45.25	31.80	25.61	23.81
8/17/2010 0:00	21.86	19.96	18.79	19.11	20.92	24.64	25.35	26.87	31.31	33.60	40.18	46.03
8/17/2010 0:00	55.52	55.93	58.41	61.90	59.35	52.91	43.02	44.95	41.70	29.32	25.54	23.45
8/18/2010 0:00	23.79	21.76	20.76	21.04	23.06	25.73	26.23	27.41	32.43	34.19	39.10	44.55
8/18/2010 0:00	53.19	55.86	57.82	61.65	59.15	53.46	45.66	46.58	45.90	32.54	27.61	24.53
8/19/2010 0:00	25.64	24.25	22.94	23.09	24.07	28.12	27.49	29.70	32.91	39.39	47.37	53.03
8/19/2010 0:00	58.28	64.74	70.82	75.26	71.13	61.99	53.19	53.02	51.18	36.68	30.61	27.57
8/20/2010 0:00	26.01	24.43	23.19	23.18	24.21	27.60	28.37	30.65	33.60	44.12	60.13	63.91
8/20/2010 0:00	70.13	73.67	81.68	86.46	68.89	63.62	52.87	56.55	52.75	37.31	28.81	27.46
8/21/2010 0:00	26.74	24.57	23.46	22.35	21.44	22.28	22.96	25.66	31.10	37.09	42.87	48.64
8/21/2010 0:00	46.88	50.14	49.78	55.82	56.55	50.65	44.24	44.06	41.99	32.67	28.77	26.36
8/22/2010 0:00	24.08	22.85	20.98	19.24	18.53	19.11	18.94	21.51	23.93	25.92	28.73	32.94
8/22/2010 0:00	33.68	37.94	41.11	46.65	46.13	43.60	37.82	40.80	40.24	29.54	25.54	23.30
8/23/2010 0:00	22.46	20.59	19.78	20.45	22.35	24.67	25.02	26.54	31.49	33.89	40.08	46.19
8/23/2010 0:00	50.57	52.77	58.07	61.33	60.01	51.38	46.79	47.59	45.52	31.86	26.47	23.73
8/24/2010 0:00	22.58	20.80	19.74	19.40	21.39	25.61	24.83	25.31	27.74	31.87	33.04	37.69
8/24/2010 0:00	41.27	44.23	46.55	50.28	49.27	41.47	38.03	43.29	39.86	30.72	25.96	22.87
8/25/2010 0:00	22.69	21.38	20.94	20.74	22.46	25.26	25.56	26.37	28.52	32.47	37.38	39.99
8/25/2010 0:00	43.56	43.99	47.90	47.43	43.80	43.09	34.61	39.86	34.93	27.63	24.31	22.05
8/26/2010 0:00	20.66	17.89	16.34	16.97	19.57	26.17	24.97	24.55	25.79	26.52	26.76	28.17
8/26/2010 0:00	30.92	31.02	31.55	31.93	31.42	30.03	26.82	29.89	27.08	23.99	22.13	20.38
8/27/2010 0:00	18.66	13.79	12.68	13.58	19.24	25.06	23.92	24.53	26.24	27.86	28.85	29.57
8/27/2010 0:00	32.30	34.50	35.25	36.52	33.46	32.05	28.51	31.26	28.79	24.70	23.63	20.80
8/28/2010 0:00	20.33	14.81	13.49	12.10	15.89	18.67	19.67	24.01	25.96	28.20	29.41	31.60
8/28/2010 0:00	36.90	39.23	39.39	44.74	44.99	39.71	34.56	38.10	39.47	30.04	24.87	23.38
8/29/2010 0:00	20.74	13.52	10.71	11.98	10.59	12.08	15.86	23.42	25.08	26.92	29.96	34.49
8/29/2010 0:00	38.94	44.88	46.84	50.96	54.64	49.24	39.90	40.57	39.82	30.05	25.89	23.36
8/30/2010 0:00	23.74	21.37	20.50	20.49	21.73	27.10	27.13	28.65	33.73	38.44	45.35	50.52
8/30/2010 0:00	54.79	59.73	65.74	74.50	66.48	56.92	50.20	53.66	49.38	35.28	29.41	25.46
8/31/2010 0:00	24.34	21.70	20.66	20.91	21.95	27.06	26.44	28.70	30.82	40.64	50.34	57.84
8/31/2010 0:00	57.28	59.08	71.89	78.24	73.07	58.96	52.00	51.74	48.04	35.23	28.55	26.56

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
9/1/2010 0:00	24.11	22.59	21.35	21.24	22.29	27.35	26.84	27.31	32.69	36.04	40.69	46.97
9/1/2010 0:00	56.46	58.88	67.30	76.47	63.87	54.79	49.94	53.19	43.47	34.26	29.99	28.21
9/2/2010 0:00	24.32	23.24	22.14	22.26	23.26	28.82	27.35	27.88	29.48	31.54	36.25	38.13
9/2/2010 0:00	42.70	47.71	53.65	54.86	47.52	40.28	37.13	41.15	35.30	28.56	26.59	27.19
9/3/2010 0:00	23.19	20.52	20.14	20.57	23.74	28.33	30.90	29.56	33.81	38.21	39.85	40.57
9/3/2010 0:00	38.51	39.45	39.99	38.30	38.27	30.92	30.38	35.72	28.33	25.03	21.13	20.05
9/4/2010 0:00	19.37	15.99	13.79	13.52	15.49	17.98	21.48	24.88	26.06	28.08	29.40	29.26
9/4/2010 0:00	28.81	28.59	28.99	28.68	29.98	29.00	27.99	32.19	30.78	25.21	21.14	17.82
9/5/2010 0:00	8.40	7.09	4.51	4.29	6.24	8.76	10.73	19.46	23.44	24.62	25.24	26.34
9/5/2010 0:00	26.74	28.31	28.57	29.54	31.79	30.86	31.72	32.10	30.89	25.62	20.71	18.75
9/6/2010 0:00	4.86	3.93	0.49	1.00	1.01	2.30	8.06	19.43	23.93	25.20	27.61	31.65
9/6/2010 0:00	34.99	40.03	40.19	41.63	41.89	39.42	39.15	40.57	38.27	26.47	21.28	19.62
9/7/2010 0:00	14.11	13.18	11.66	12.46	20.00	27.32	26.13	28.10	32.09	38.07	39.10	41.30
9/7/2010 0:00	48.03	53.55	64.55	67.12	60.27	49.52	42.99	47.54	37.71	27.64	24.29	20.94
9/8/2010 0:00	14.79	12.33	10.18	11.53	17.46	26.57	25.16	24.74	25.45	26.97	28.16	29.81
9/8/2010 0:00	30.49	30.54	33.33	32.37	31.38	29.13	27.12	32.01	26.78	24.81	20.52	17.28
9/9/2010 0:00	4.60	1.96	0.99	2.60	16.26	26.58	25.82	26.81	27.79	29.22	30.48	31.57
9/9/2010 0:00	34.96	34.80	39.17	39.05	36.43	31.31	29.50	39.01	30.84	25.86	19.63	17.85
9/10/2010 0:00	17.32	14.60	12.41	14.65	20.63	27.11	25.74	26.00	28.07	30.65	31.54	35.16
9/10/2010 0:00	37.04	37.01	38.43	37.69	33.63	29.59	27.78	32.90	27.38	24.14	20.66	19.62
9/11/2010 0:00	15.15	11.25	9.09	12.54	14.97	17.40	18.81	22.43	26.50	28.38	29.51	28.56
9/11/2010 0:00	27.73	30.07	28.46	28.57	28.39	27.34	26.59	34.97	27.06	24.59	20.12	13.11
9/12/2010 0:00	14.05	11.71	8.32	7.41	7.52	9.97	13.89	19.86	22.99	23.66	24.51	24.71
9/12/2010 0:00	25.00	25.26	25.85	27.13	27.11	26.60	27.19	40.46	28.09	23.58	17.79	15.95
9/13/2010 0:00	15.92	14.02	11.11	13.74	20.33	28.15	24.83	27.47	30.01	31.45	35.77	37.96
9/13/2010 0:00	41.16	41.67	45.99	44.00	42.04	35.15	35.25	43.93	32.50	27.19	22.03	19.91
9/14/2010 0:00	18.65	16.51	15.00	16.82	20.26	31.00	26.68	27.04	30.45	31.95	34.97	38.19
9/14/2010 0:00	39.34	40.30	43.65	44.40	39.34	32.35	32.66	41.12	31.85	25.77	22.24	20.30
9/15/2010 0:00	18.92	17.32	14.44	16.53	20.35	30.78	25.29	24.97	26.49	29.49	31.10	31.92
9/15/2010 0:00	36.67	38.29	41.68	42.38	37.80	34.69	34.61	41.25	30.46	24.94	20.86	19.49
9/16/2010 0:00	18.20	15.82	14.35	15.97	19.99	32.79	28.39	27.66	31.37	34.50	37.04	38.96
9/16/2010 0:00	38.53	38.47	38.69	38.23	32.93	29.89	32.36	40.47	30.73	25.06	19.72	18.58
9/17/2010 0:00	19.20	18.64	16.48	18.53	21.31	34.24	30.34	27.07	30.29	32.95	35.57	39.84
9/17/2010 0:00	40.97	41.89	41.99	42.11	37.65	32.29	33.88	41.66	31.86	25.84	23.17	19.95
9/18/2010 0:00	19.23	16.80	14.86	15.21	17.34	19.96	21.56	23.80	26.82	29.37	31.67	30.34
9/18/2010 0:00	33.24	39.02	41.85	43.52	43.34	39.98	40.69	45.71	34.05	28.81	22.42	20.01
9/19/2010 0:00	18.44	15.72	13.62	13.99	14.30	19.36	20.16	21.10	23.84	24.77	26.70	29.18
9/19/2010 0:00	33.22	34.89	37.23	40.28	41.55	39.25	41.37	59.65	39.40	29.32	22.44	20.31
9/20/2010 0:00	19.53	19.36	16.91	19.31	21.79	34.53	33.11	27.99	30.46	34.96	40.08	42.01
9/20/2010 0:00	43.50	43.29	46.34	49.91	43.52	38.76	41.45	43.30	30.18	26.20	23.30	20.75
9/21/2010 0:00	20.09	19.68	18.47	19.39	20.84	35.08	31.84	29.14	30.82	37.40	42.96	48.75
9/21/2010 0:00	55.95	61.80	72.53	75.00	70.37	58.13	59.95	63.12	46.79	34.08	25.89	23.89
9/22/2010 0:00	21.35	20.51	20.03	20.49	21.76	35.21	31.04	29.42	32.15	37.44	39.17	46.40
9/22/2010 0:00	50.61	54.46	54.71	58.44	51.26	43.97	43.88	46.98	35.41	29.55	25.39	23.34
9/23/2010 0:00	22.61	21.67	20.92	21.10	22.58	33.94	30.36	29.21	33.45	36.66	42.01	47.41
9/23/2010 0:00	57.20	64.15	70.64	79.09	72.73	57.32	57.69	55.68	41.91	32.77	28.99	24.46
9/24/2010 0:00	23.46	21.33	20.65	21.07	23.20	34.14	30.89	30.02	32.73	37.00	42.79	46.47
9/24/2010 0:00	53.19	53.00	51.38	48.84	40.74	31.84	32.07	32.96	29.49	25.38	23.62	21.39
9/25/2010 0:00	20.91	20.57	19.48	19.06	19.92	21.12	22.26	24.21	25.92	28.03	29.49	29.01
9/25/2010 0:00	27.89	28.12	28.06	28.69	28.12	27.74	34.19	35.58	26.84	24.56	21.07	18.76
9/26/2010 0:00	15.92	14.95	12.56	13.47	14.46	17.18	18.23	21.60	24.22	25.11	24.73	24.62
9/26/2010 0:00	24.37	24.28	24.53	25.20	25.70	26.34	35.21	44.82	28.65	25.04	20.14	20.25
9/27/2010 0:00	19.02	18.91	18.27	19.31	22.20	33.71	40.30	34.26	29.36	34.58	37.77	32.17
9/27/2010 0:00	32.61	32.41	33.07	32.39	31.07	29.55	39.85	37.00	27.92	24.92	23.57	21.16
9/28/2010 0:00	19.44	18.26	17.71	19.59	21.38	33.93	37.38	26.26	27.41	29.64	33.37	36.80
9/28/2010 0:00	36.60	35.95	33.94	32.76	30.26	29.15	39.38	36.25	29.29	25.27	21.86	21.13
9/29/2010 0:00	19.24	18.70	18.20	19.29	21.39	31.79	32.93	27.51	28.77	32.84	33.70	34.53
9/29/2010 0:00	35.57	35.51	36.27	36.58	32.66	29.70	38.81	37.69	28.90	24.74	23.28	21.56
9/30/2010 0:00	18.99	12.89	13.33	16.99	21.53	28.92	33.79	25.33	27.70	31.17	35.44	35.99
9/30/2010 0:00	36.78	36.61	34.99	34.15	30.81	29.66	39.93	39.30	31.09	25.59	21.45	20.69

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
10/1/2010 0:00	17.05	14.84	14.91	17.48	21.39	29.38	39.58	33.38	34.90	34.79	35.13	36.21
10/1/2010 0:00	34.52	34.16	34.26	31.74	29.33	28.38	38.95	36.59	26.71	24.61	20.33	20.72
10/2/2010 0:00	20.17	19.82	19.47	19.95	20.60	22.26	22.89	25.84	28.12	43.96	40.61	37.71
10/2/2010 0:00	35.08	32.83	32.01	32.03	32.17	25.40	35.58	30.62	26.21	25.04	21.07	19.39
10/3/2010 0:00	20.13	19.63	18.87	18.64	19.30	21.15	22.79	23.29	24.66	26.04	26.21	25.08
10/3/2010 0:00	24.83	24.77	24.65	24.96	25.28	25.71	40.81	36.02	28.13	25.32	21.95	21.56
10/4/2010 0:00	20.23	17.37	17.16	14.35	20.42	28.78	43.03	37.73	33.55	36.38	36.20	32.66
10/4/2010 0:00	31.87	30.84	27.29	26.67	26.14	26.66	46.13	35.92	29.17	26.18	21.92	21.77
10/5/2010 0:00	20.78	20.95	21.14	21.84	25.13	33.55	40.97	36.28	39.94	40.15	38.33	36.91
10/5/2010 0:00	37.32	37.49	34.96	33.93	30.95	31.78	42.09	37.68	33.22	27.62	23.54	22.87
10/6/2010 0:00	19.48	19.38	19.50	20.23	22.99	30.70	34.16	28.75	29.16	31.93	33.85	34.14
10/6/2010 0:00	34.38	33.90	27.92	27.99	28.46	28.28	38.82	34.31	27.76	24.89	22.53	21.49
10/7/2010 0:00	19.66	19.27	18.66	19.39	23.04	30.94	33.61	28.67	30.05	32.52	34.33	33.94
10/7/2010 0:00	33.89	34.81	33.48	30.92	29.52	29.93	41.42	37.58	29.05	25.38	22.98	21.45
10/8/2010 0:00	20.16	18.33	18.59	19.31	21.70	29.32	29.21	25.65	26.45	28.42	30.20	31.39
10/8/2010 0:00	32.02	34.33	33.49	31.39	30.95	28.03	35.11	33.79	27.65	23.70	21.96	21.09
10/9/2010 0:00	18.99	17.32	16.18	15.96	18.55	21.90	23.41	25.90	27.80	31.12	33.52	32.43
10/9/2010 0:00	32.40	32.60	32.45	32.47	32.85	33.62	41.33	36.98	29.69	26.49	22.32	21.53
10/10/2010 0:00	19.70	17.31	17.09	16.79	17.25	20.23	21.51	22.15	23.84	24.81	26.44	26.79
10/10/2010 0:00	28.15	28.79	30.71	31.26	32.85	33.38	45.71	44.37	32.94	26.40	22.74	21.98
10/11/2010 0:00	18.91	18.01	19.17	19.63	20.40	27.51	29.53	27.04	29.31	30.90	35.41	34.95
10/11/2010 0:00	36.91	37.40	38.76	35.58	35.33	35.43	38.43	35.29	29.36	25.50	24.16	22.19
10/12/2010 0:00	20.31	19.48	19.62	19.94	21.22	25.67	30.05	28.92	28.78	32.51	33.50	37.69
10/12/2010 0:00	37.04	37.29	37.01	35.37	32.58	31.48	37.87	37.08	28.60	25.14	23.19	22.00
10/13/2010 0:00	21.60	21.11	20.94	21.50	22.60	28.49	35.00	31.32	32.69	34.32	37.36	37.35
10/13/2010 0:00	37.32	37.07	37.47	35.96	31.52	31.59	46.85	38.61	31.70	27.03	24.11	22.64
10/14/2010 0:00	20.38	19.99	20.19	21.23	22.36	29.13	36.10	30.88	31.32	31.07	30.73	30.71
10/14/2010 0:00	30.17	29.23	26.92	26.69	25.94	26.52	32.83	29.69	26.23	23.99	22.44	20.58
10/15/2010 0:00	19.52	18.64	18.79	19.35	21.27	26.73	35.13	34.18	34.22	35.81	38.07	36.27
10/15/2010 0:00	34.14	33.13	30.24	29.53	28.42	28.84	35.46	31.50	32.01	29.88	23.15	23.26
10/16/2010 0:00	22.94	20.76	19.52	19.95	19.90	22.97	25.73	27.15	28.53	28.80	28.19	26.21
10/16/2010 0:00	25.55	25.15	24.78	24.91	25.23	26.48	37.42	28.97	25.21	23.68	19.97	18.07
10/17/2010 0:00	20.33	19.44	18.92	18.87	18.90	20.40	23.56	24.15	25.03	25.42	26.46	26.78
10/17/2010 0:00	26.58	26.26	26.42	27.53	28.36	32.02	44.53	39.30	32.59	26.69	22.48	20.92
10/18/2010 0:00	21.89	21.69	21.77	22.03	26.01	32.70	43.44	35.18	36.35	39.79	42.32	40.02
10/18/2010 0:00	39.64	37.08	33.90	30.79	30.83	31.56	41.32	35.06	29.08	24.96	22.60	21.48
10/19/2010 0:00	18.85	18.52	18.54	18.98	22.32	28.79	39.62	32.67	31.29	32.83	33.01	31.01
10/19/2010 0:00	31.15	31.09	29.10	28.43	27.68	29.12	37.42	32.75	29.73	25.52	23.11	20.67
10/20/2010 0:00	20.71	20.81	21.31	21.64	22.76	29.40	41.83	34.21	33.29	34.11	32.26	32.04
10/20/2010 0:00	32.17	30.89	30.18	29.45	28.15	29.82	41.83	33.22	27.96	24.75	23.11	22.59
10/21/2010 0:00	19.95	19.96	20.08	20.61	24.13	29.97	43.56	33.77	33.60	35.87	37.51	33.60
10/21/2010 0:00	33.50	33.18	31.52	30.95	30.14	32.82	46.51	39.04	32.14	26.62	23.03	22.70
10/22/2010 0:00	20.88	20.46	20.39	20.92	23.98	34.26	45.51	38.44	34.14	36.26	37.73	35.25
10/22/2010 0:00	32.96	31.40	29.39	28.01	26.94	29.32	34.39	29.50	27.50	25.56	22.55	22.05
10/23/2010 0:00	20.93	20.21	19.92	20.14	20.76	22.46	25.78	27.51	27.18	28.11	28.57	27.56
10/23/2010 0:00	26.42	25.45	25.01	25.25	27.49	29.15	39.52	30.77	27.75	25.35	22.49	20.06
10/24/2010 0:00	19.12	17.13	15.16	15.30	17.21	19.80	22.19	22.24	24.15	24.76	26.17	25.89
10/24/2010 0:00	25.49	25.40	25.82	25.64	26.45	29.68	41.19	34.27	28.68	24.53	20.98	19.51
10/25/2010 0:00	19.67	19.92	19.92	19.97	23.67	33.44	44.71	36.49	34.40	34.29	35.70	36.92
10/25/2010 0:00	37.52	36.52	35.25	36.73	35.44	37.97	42.39	37.17	32.85	26.33	22.74	20.94
10/26/2010 0:00	20.51	20.04	20.21	20.94	24.23	34.56	43.42	31.26	31.96	32.21	33.92	35.76
10/26/2010 0:00	39.52	36.78	33.53	32.01	30.41	35.97	43.87	34.70	28.23	24.33	21.37	19.61
10/27/2010 0:00	16.76	17.27	16.05	18.34	22.74	32.11	37.67	29.04	29.62	31.98	30.72	31.47
10/27/2010 0:00	32.19	30.40	28.64	28.39	28.22	31.62	37.90	32.85	26.90	23.83	21.66	19.96
10/28/2010 0:00	18.52	17.84	16.60	17.62	21.46	33.02	43.05	33.67	34.03	36.69	38.05	36.05
10/28/2010 0:00	39.20	36.35	35.20	32.43	33.21	37.43	48.45	37.92	34.93	29.66	24.44	23.41
10/29/2010 0:00	23.96	24.08	23.98	23.88	26.48	37.20	48.74	43.00	42.05	41.56	36.38	34.84
10/29/2010 0:00	34.23	29.70	27.52	26.37	27.03	32.56	41.18	34.67	30.25	27.23	25.17	23.85
10/30/2010 0:00	24.06	24.08	23.59	23.72	23.23	25.07	28.51	29.44	31.87	31.63	31.80	29.46
10/30/2010 0:00	26.45	25.22	24.67	24.70	25.09	29.63	36.01	31.45	28.56	25.14	22.56	22.17
10/31/2010 0:00	23.33	23.65	23.47	23.16	23.53	24.06	23.56	24.29	26.72	27.02	26.28	25.21
10/31/2010 0:00	25.00	24.50	23.99	24.41	25.27	30.08	42.15	32.47	30.31	25.54	22.63	21.77

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
11/1/2010 0:00	22.19	22.18	22.28	23.31	26.70	36.65	50.48	42.44	38.65	38.78	37.60	36.07
11/1/2010 0:00	32.94	32.06	31.23	30.02	30.44	37.35	49.57	43.57	37.08	29.79	27.67	24.81
11/2/2010 0:00	21.79	22.36	22.51	22.69	23.76	35.69	48.02	36.50	35.77	37.95	36.53	35.89
11/2/2010 0:00	35.02	33.20	29.32	29.38	28.69	37.17	41.97	35.77	31.87	28.04	24.96	23.43
11/3/2010 0:00	24.95	25.45	24.88	25.46	26.57	38.41	46.53	35.77	35.97	36.21	36.06	34.19
11/3/2010 0:00	33.14	31.00	28.95	28.32	28.12	37.56	38.45	35.34	31.59	28.03	26.62	25.31
11/4/2010 0:00	23.88	23.87	23.72	24.08	24.12	36.31	48.59	38.90	37.93	43.00	41.47	37.69
11/4/2010 0:00	36.55	35.60	31.21	29.75	31.39	41.88	46.01	38.38	34.19	28.84	27.15	24.19
11/5/2010 0:00	24.20	24.65	24.46	25.00	25.80	36.89	53.42	41.86	41.44	42.27	41.73	38.55
11/5/2010 0:00	38.57	37.49	34.20	33.23	33.98	49.34	51.07	46.60	37.44	32.69	30.15	26.80
11/6/2010 0:00	29.14	28.70	29.37	28.88	29.73	32.57	35.89	38.79	39.45	40.88	39.84	36.68
11/6/2010 0:00	30.94	28.28	27.66	27.83	28.32	43.29	38.28	36.50	34.22	29.59	28.33	28.62
11/7/2010 0:00	31.60	31.42	29.55	26.05	24.86	26.49	28.95	28.19	28.46	29.18	28.94	28.29
11/7/2010 0:00	27.11	26.39	25.80	25.82	26.03	38.27	44.09	38.25	32.52	26.70	25.71	24.55
11/8/2010 0:00	22.53	22.63	22.51	21.57	22.45	30.90	40.99	37.31	37.94	37.46	35.65	35.33
11/8/2010 0:00	33.28	32.26	29.64	28.27	29.94	39.10	39.13	34.20	32.58	26.95	23.93	21.03
11/9/2010 0:00	21.49	21.64	21.33	21.05	21.74	26.52	37.52	38.96	38.51	38.61	37.81	35.24
11/9/2010 0:00	34.34	32.15	30.90	29.97	29.42	40.15	41.17	38.37	37.15	29.39	24.64	22.31
11/10/2010 0:00	19.28	19.18	19.08	18.97	19.88	23.44	40.85	41.08	37.50	38.78	37.60	37.80
11/10/2010 0:00	35.91	34.40	30.81	28.45	28.34	40.31	40.46	39.14	33.55	28.76	24.85	22.39
11/11/2010 0:00	20.09	19.41	19.43	19.54	20.20	23.02	47.90	42.93	36.38	34.39	37.82	33.93
11/11/2010 0:00	33.68	33.01	30.28	28.45	28.53	44.98	49.41	38.35	34.34	30.34	24.51	21.30
11/12/2010 0:00	19.12	18.07	17.24	17.27	18.97	21.27	43.94	37.29	35.13	36.05	36.06	34.65
11/12/2010 0:00	36.93	36.14	33.42	29.57	28.08	41.29	40.45	33.99	32.71	28.26	25.45	23.09
11/13/2010 0:00	23.69	23.90	22.99	21.63	21.64	24.03	26.48	28.28	30.19	31.93	30.02	28.83
11/13/2010 0:00	27.24	26.17	25.67	25.21	25.82	41.63	37.69	32.79	28.79	26.21	23.87	21.87
11/14/2010 0:00	21.16	20.04	19.13	19.22	19.20	19.21	22.93	23.60	25.34	26.64	26.69	26.10
11/14/2010 0:00	25.98	25.78	24.87	25.08	26.70	37.21	37.61	37.43	34.09	28.46	25.92	24.36
11/15/2010 0:00	23.10	22.59	22.42	22.32	22.61	25.08	47.65	43.26	39.88	42.40	44.99	41.91
11/15/2010 0:00	37.13	34.46	31.01	29.52	28.93	49.78	43.90	38.46	38.53	32.12	27.76	23.69
11/16/2010 0:00	21.28	20.95	20.71	20.60	20.65	22.64	44.67	39.37	38.23	37.27	37.84	36.31
11/16/2010 0:00	33.40	32.05	29.81	28.79	28.28	45.51	38.65	35.80	33.67	30.46	26.57	23.46
11/17/2010 0:00	21.17	21.15	21.12	21.38	21.23	22.99	38.24	38.48	32.30	33.87	34.00	33.48
11/17/2010 0:00	34.61	31.69	30.96	29.47	29.42	42.04	40.24	37.97	33.46	31.88	25.73	22.90
11/18/2010 0:00	25.03	23.96	23.86	23.30	23.53	24.96	43.62	42.58	40.84	40.38	43.72	39.68
11/18/2010 0:00	33.72	31.58	31.07	29.79	29.88	47.42	43.89	44.08	37.72	34.36	28.77	26.97
11/19/2010 0:00	25.78	25.13	24.43	24.10	24.24	25.07	46.31	42.41	39.23	36.78	34.92	34.37
11/19/2010 0:00	33.80	29.35	27.78	27.32	26.84	48.28	47.46	37.66	30.54	27.59	23.50	23.60
11/20/2010 0:00	22.57	21.43	21.19	20.21	20.36	21.61	26.26	28.03	32.37	35.69	33.44	31.90
11/20/2010 0:00	26.58	26.09	24.29	23.63	24.61	43.56	38.63	32.33	27.66	24.37	22.28	20.18
11/21/2010 0:00	19.95	19.31	19.16	18.38	18.82	20.33	22.20	24.12	26.08	26.93	26.60	26.29
11/21/2010 0:00	26.11	24.91	23.74	23.83	25.82	48.41	44.32	41.21	34.79	25.62	22.51	21.00
11/22/2010 0:00	20.09	19.98	19.76	19.70	20.11	23.62	39.32	44.52	42.36	44.06	48.67	47.94
11/22/2010 0:00	47.36	42.96	39.24	34.56	35.82	66.90	65.61	56.00	48.18	35.97	30.03	25.81
11/23/2010 0:00	20.87	20.77	20.58	20.51	20.56	22.05	34.95	40.78	37.70	41.92	42.20	42.42
11/23/2010 0:00	36.74	34.21	31.63	29.23	29.44	54.54	46.12	44.75	41.26	31.76	28.77	24.73
11/24/2010 0:00	24.14	24.21	24.07	23.25	23.49	27.49	42.39	41.85	40.74	36.49	35.30	34.43
11/24/2010 0:00	34.32	31.81	29.35	28.48	29.51	50.07	40.60	37.96	33.67	29.39	27.44	25.75
11/25/2010 0:00	23.15	22.48	22.24	22.43	22.02	22.51	22.99	25.45	27.88	30.75	31.84	31.69
11/25/2010 0:00	27.22	25.67	25.11	24.26	24.52	27.12	26.18	26.51	26.43	26.25	25.17	23.02
11/26/2010 0:00	21.53	21.13	21.15	21.34	21.53	22.16	25.72	33.24	31.20	33.25	33.43	33.66
11/26/2010 0:00	31.62	30.41	29.74	29.67	34.38	62.51	56.90	48.29	47.22	41.72	34.03	27.60
11/27/2010 0:00	23.02	22.45	22.14	21.90	22.03	22.32	25.11	26.83	30.11	32.00	31.90	30.43
11/27/2010 0:00	27.40	25.64	24.47	24.32	24.83	48.63	34.32	36.25	34.01	29.09	26.75	24.47
11/28/2010 0:00	23.95	23.35	23.44	22.68	22.32	22.09	23.32	25.64	26.27	26.81	26.67	26.11
11/28/2010 0:00	25.16	24.44	23.65	23.57	25.50	42.65	36.80	35.35	31.90	28.11	26.41	25.32
11/29/2010 0:00	23.58	23.82	23.27	23.04	23.11	24.28	34.87	47.84	42.10	39.24	42.11	36.85
11/29/2010 0:00	32.40	29.56	28.81	28.55	29.20	53.26	45.33	41.14	39.38	30.49	28.22	22.52
11/30/2010 0:00	21.29	21.19	20.57	20.61	20.57	21.89	31.43	35.37	30.45	31.80	30.50	32.34
11/30/2010 0:00	30.79	30.58	30.03	29.41	30.89	49.19	45.93	43.45	38.13	31.71	29.69	25.10

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
12/1/2010 0:00	22.32	22.55	22.58	22.74	22.63	24.64	36.63	43.81	38.74	38.82	39.82	37.50
12/1/2010 0:00	33.51	32.97	31.17	30.35	33.91	52.02	46.98	42.26	40.61	35.10	28.97	24.21
12/2/2010 0:00	27.23	26.16	25.76	25.18	25.55	27.50	43.16	49.74	47.70	44.14	43.67	42.37
12/2/2010 0:00	36.53	34.15	30.36	29.14	32.95	58.67	49.99	43.64	42.35	40.85	29.33	25.12
12/3/2010 0:00	27.15	26.27	25.82	25.45	25.56	26.80	44.32	49.42	47.40	43.91	44.68	40.76
12/3/2010 0:00	34.46	34.27	29.27	28.43	29.47	52.08	48.58	43.94	41.79	38.37	31.73	28.03
12/4/2010 0:00	28.80	27.22	26.95	25.80	25.38	25.94	28.05	30.41	33.13	39.68	46.66	41.47
12/4/2010 0:00	32.42	29.09	28.69	28.57	30.06	56.28	49.32	44.27	44.26	39.40	33.55	28.11
12/5/2010 0:00	27.25	26.69	25.93	24.84	23.85	23.38	24.36	26.89	27.84	29.80	29.41	29.51
12/5/2010 0:00	29.12	28.74	28.13	28.00	30.20	53.36	51.14	49.38	44.61	40.48	28.57	26.00
12/6/2010 0:00	26.92	26.81	25.91	25.81	25.92	27.96	43.50	53.19	50.99	47.24	49.74	47.66
12/6/2010 0:00	45.99	44.32	36.86	32.38	38.99	73.01	60.84	59.80	58.95	51.44	38.16	35.50
12/7/2010 0:00	30.97	29.66	28.86	28.53	28.36	32.34	54.51	52.71	47.25	47.50	47.35	43.14
12/7/2010 0:00	41.27	38.96	35.48	32.22	36.44	61.03	53.81	48.40	47.06	46.63	37.72	36.49
12/8/2010 0:00	31.07	29.68	28.89	28.68	28.72	32.04	51.53	63.81	53.37	56.06	62.25	52.93
12/8/2010 0:00	48.73	48.29	42.20	41.35	46.72	73.16	67.82	66.62	57.09	54.36	38.31	29.43
12/9/2010 0:00	37.32	37.45	36.61	35.74	35.71	41.15	59.33	64.73	52.24	51.32	51.05	46.38
12/9/2010 0:00	38.69	37.59	32.41	30.34	39.38	70.94	62.33	53.78	53.41	47.63	36.61	34.45
12/10/2010 0:00	29.72	27.65	26.48	25.87	25.64	28.05	43.82	52.56	50.53	50.23	55.03	47.80
12/10/2010 0:00	41.93	37.90	34.55	31.09	33.28	56.19	49.51	49.80	48.85	40.26	29.68	26.48
12/11/2010 0:00	26.84	24.90	24.36	23.82	23.36	23.94	26.01	26.67	29.99	32.57	33.01	29.88
12/11/2010 0:00	28.59	26.43	26.01	26.19	28.67	54.53	43.20	38.48	38.60	34.26	28.02	26.20
12/12/2010 0:00	22.74	22.38	22.25	21.77	21.62	21.96	22.86	24.50	27.02	29.24	29.71	28.84
12/12/2010 0:00	28.59	28.64	28.07	28.20	34.06	67.48	64.06	55.16	52.23	51.80	39.68	35.78
12/13/2010 0:00	28.45	27.92	27.70	26.95	27.45	33.51	51.38	71.85	72.54	75.71	65.80	61.40
12/13/2010 0:00	54.55	51.56	48.16	49.14	52.48	87.02	97.74	86.12	79.14	70.45	54.52	41.55
12/14/2010 0:00	44.84	40.60	38.88	37.84	40.27	46.96	53.90	82.31	92.17	79.30	72.77	69.63
12/14/2010 0:00	59.58	56.81	54.17	51.14	54.22	89.14	85.65	73.98	74.35	71.03	54.03	41.39
12/15/2010 0:00	47.51	38.78	37.18	36.07	39.15	50.41	76.36	93.22	92.81	83.98	76.02	72.38
12/15/2010 0:00	60.80	55.91	51.28	48.09	55.13	82.97	85.14	81.09	74.76	71.63	58.67	46.52
12/16/2010 0:00	38.08	34.89	34.84	32.86	33.46	36.29	56.52	75.18	70.87	74.18	70.96	70.78
12/16/2010 0:00	57.02	49.86	41.92	38.49	46.87	83.28	83.15	69.40	71.59	62.58	49.70	39.94
12/17/2010 0:00	36.51	31.75	30.43	29.07	30.16	36.61	56.87	54.49	49.64	47.49	46.95	46.02
12/17/2010 0:00	40.88	38.57	34.08	31.24	36.94	58.85	60.55	55.19	57.84	46.82	42.23	36.46
12/18/2010 0:00	40.04	38.22	36.02	31.91	31.87	31.69	34.80	37.34	49.27	52.42	51.56	39.43
12/18/2010 0:00	36.12	32.54	31.27	32.13	34.59	56.34	60.53	50.55	47.00	46.03	38.46	31.56
12/19/2010 0:00	30.95	29.56	28.45	27.99	27.76	28.50	31.98	31.13	34.22	36.34	36.83	35.61
12/19/2010 0:00	37.15	35.50	32.78	33.04	35.88	61.07	69.61	57.87	52.90	47.65	41.06	32.17
12/20/2010 0:00	31.93	29.37	29.52	28.90	29.25	33.03	50.45	53.61	49.55	51.82	46.30	39.87
12/20/2010 0:00	36.79	34.76	32.23	30.61	34.57	55.47	56.34	50.14	44.58	38.46	32.87	28.68
12/21/2010 0:00	27.63	26.97	26.57	26.01	26.61	27.12	35.34	45.85	46.80	56.73	57.36	48.58
12/21/2010 0:00	41.76	39.76	33.59	32.74	36.33	59.92	55.83	46.25	43.02	41.55	35.95	30.30
12/22/2010 0:00	29.24	28.17	27.79	27.50	27.66	27.76	34.77	44.12	44.96	45.62	45.59	46.60
12/22/2010 0:00	41.40	40.14	38.09	34.30	35.53	56.39	53.99	48.02	42.05	40.22	34.80	29.36
12/23/2010 0:00	28.02	26.38	25.81	25.27	25.55	26.83	29.25	41.58	41.11	42.63	42.52	40.06
12/23/2010 0:00	34.28	31.99	29.45	28.26	28.84	46.75	48.56	43.15	39.69	37.43	31.86	27.52
12/24/2010 0:00	25.29	24.75	24.32	23.30	23.10	23.42	24.45	26.78	28.11	31.24	31.75	30.44
12/24/2010 0:00	26.30	25.70	25.04	24.95	25.29	33.66	29.95	27.80	27.57	26.34	25.28	24.18
12/25/2010 0:00	22.42	22.56	21.76	21.68	21.40	21.12	21.26	22.97	24.41	26.69	24.97	24.84
12/25/2010 0:00	24.05	23.47	22.97	22.99	23.22	28.02	27.67	26.98	26.93	26.54	25.48	23.64
12/26/2010 0:00	25.49	24.78	23.28	23.00	22.70	22.50	23.12	25.63	27.10	28.65	29.35	29.34
12/26/2010 0:00	28.59	28.02	27.39	27.42	29.62	49.26	54.52	49.04	44.84	43.68	31.72	28.64
12/27/2010 0:00	27.54	27.11	26.38	25.91	25.91	27.80	31.36	43.78	43.98	44.82	44.34	44.34
12/27/2010 0:00	40.59	37.70	35.94	32.28	35.34	49.16	59.69	48.76	44.32	45.58	32.93	28.47
12/28/2010 0:00	27.99	26.89	25.99	25.07	25.58	27.98	32.62	40.18	43.18	44.02	43.75	43.18
12/28/2010 0:00	38.85	36.12	30.67	29.27	30.87	46.75	57.41	45.66	39.08	40.31	31.80	27.20
12/29/2010 0:00	26.68	25.90	25.70	25.20	25.23	25.97	28.65	39.10	39.80	40.42	40.32	40.11
12/29/2010 0:00	37.45	33.06	29.51	28.14	29.10	44.15	48.64	41.96	38.39	37.02	28.84	25.60
12/30/2010 0:00	22.01	21.58	21.60	21.31	21.31	21.73	25.88	27.94	28.36	32.14	32.30	31.43
12/30/2010 0:00	29.60	28.01	26.54	25.09	24.99	37.71	40.37	33.57	28.77	26.96	24.67	24.50
12/31/2010 0:00	22.18	20.84	19.43	17.05	18.28	18.99	22.31	25.66	25.38	27.00	27.39	27.80
12/31/2010 0:00	27.37	26.01	23.99	23.78	24.35	36.50	38.55	27.44	25.55	23.49	22.87	21.37

Day Ahead System Lambda – Energy Only

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
1/1/2010 0:00	26.62	25.01	23.42	22.66	22.02	21.94	23.98	24.83	26.30	29.21	31.97	32.31
1/1/2010 0:00	30.66	28.06	26.99	26.99	27.83	47.72	63.45	58.63	56.47	45.66	39.93	31.57
1/2/2010 0:00	28.14	27.96	27.11	25.52	24.98	25.18	27.58	30.87	33.68	42.44	55.05	53.38
1/2/2010 0:00	44.31	39.39	33.58	31.77	34.20	62.82	80.64	65.18	60.07	51.00	47.73	44.99
1/3/2010 0:00	36.69	34.05	32.22	30.55	29.62	29.04	31.61	32.09	37.01	42.03	48.80	46.62
1/3/2010 0:00	40.96	34.81	30.84	30.67	33.28	58.32	80.79	65.44	58.52	48.94	45.36	39.62
1/4/2010 0:00	38.85	35.78	32.32	31.95	33.36	38.94	57.63	68.60	69.18	67.34	68.33	64.70
1/4/2010 0:00	54.53	49.94	46.29	43.18	44.88	71.67	93.77	78.31	71.23	66.28	50.72	45.51
1/5/2010 0:00	33.89	31.60	28.79	29.13	29.63	34.91	51.57	64.52	64.24	61.78	61.26	59.48
1/5/2010 0:00	52.48	45.43	41.43	37.60	37.96	64.89	82.51	72.15	66.16	58.72	43.49	35.13
1/6/2010 0:00	35.83	33.23	30.46	30.94	33.65	39.33	56.65	71.02	72.52	69.23	70.49	66.33
1/6/2010 0:00	59.84	50.88	44.63	41.02	40.99	66.12	87.56	75.60	69.30	60.53	43.49	34.36
1/7/2010 0:00	28.37	26.71	25.56	25.07	25.48	30.56	46.28	61.58	63.32	59.20	62.12	60.49
1/7/2010 0:00	57.01	51.23	44.59	39.61	39.87	65.36	85.21	72.28	64.84	57.93	44.29	31.34
1/8/2010 0:00	26.99	25.82	24.67	24.49	24.66	26.06	40.15	59.57	62.55	62.04	65.41	64.04
1/8/2010 0:00	59.45	57.49	46.60	40.10	40.95	66.20	84.52	66.73	61.82	59.56	50.71	38.42
1/9/2010 0:00	41.25	39.45	35.20	34.22	33.82	35.54	43.78	54.34	58.43	64.06	66.96	62.04
1/9/2010 0:00	52.73	46.40	39.00	34.79	36.60	62.13	79.43	68.11	61.55	52.51	47.27	39.84
1/10/2010 0:00	36.35	34.13	31.53	30.56	29.44	28.77	29.76	33.12	38.59	46.77	48.77	47.17
1/10/2010 0:00	41.90	36.03	31.06	29.98	30.35	56.83	81.44	69.98	65.30	54.93	48.49	38.65
1/11/2010 0:00	29.58	26.96	26.90	26.51	27.22	30.10	42.24	61.27	64.71	62.01	64.81	62.34
1/11/2010 0:00	60.07	51.63	43.13	39.24	38.93	65.08	87.46	69.85	66.69	58.11	44.59	39.11
1/12/2010 0:00	28.16	26.99	25.90	25.45	26.18	27.74	39.72	58.45	57.15	53.31	55.57	53.21
1/12/2010 0:00	49.38	43.13	35.38	31.57	30.33	51.99	71.80	59.38	52.86	45.50	31.83	28.82
1/13/2010 0:00	25.10	24.21	23.98	24.11	24.45	25.88	38.78	51.40	52.17	50.39	50.82	48.36
1/13/2010 0:00	44.30	36.80	31.21	28.95	28.58	48.75	64.56	53.32	50.41	41.31	29.85	28.28
1/14/2010 0:00	26.08	24.91	23.24	23.35	23.70	26.90	40.53	52.55	49.17	48.89	48.73	46.83
1/14/2010 0:00	39.45	34.96	30.54	29.20	29.09	46.93	55.62	50.46	46.52	39.72	29.85	27.57
1/15/2010 0:00	25.55	23.98	23.53	23.20	23.74	25.54	36.81	51.79	50.33	50.58	50.12	46.45
1/15/2010 0:00	42.03	35.86	31.49	29.33	28.41	44.53	51.11	48.58	41.71	33.78	28.46	27.61
1/16/2010 0:00	24.84	23.87	22.82	22.45	22.43	23.23	25.97	29.22	32.68	39.38	40.86	35.66
1/16/2010 0:00	31.14	28.38	26.18	25.78	26.32	37.67	46.72	42.03	36.46	32.33	27.85	25.67
1/17/2010 0:00	24.26	23.08	22.76	22.36	21.92	21.51	23.23	25.72	26.85	29.22	30.03	31.18
1/17/2010 0:00	29.40	28.42	27.34	27.10	28.09	45.61	53.96	52.28	47.92	39.88	29.37	26.26
1/18/2010 0:00	23.72	23.24	22.49	22.43	22.76	24.29	29.22	44.44	46.03	50.90	53.39	49.41
1/18/2010 0:00	45.53	40.30	33.82	30.71	30.32	47.55	57.42	52.47	47.99	41.54	29.25	25.34
1/19/2010 0:00	24.90	23.69	22.86	22.81	23.18	25.13	38.05	53.07	52.75	52.83	52.26	47.47
1/19/2010 0:00	45.14	41.67	33.66	30.62	30.77	47.26	57.29	52.49	48.99	44.23	29.44	26.52
1/20/2010 0:00	23.80	22.73	21.80	21.64	21.86	23.28	31.15	47.19	46.97	46.37	45.93	43.99
1/20/2010 0:00	38.20	35.08	31.12	30.12	31.30	40.32	53.74	49.56	44.83	35.93	26.75	24.47
1/21/2010 0:00	22.35	20.89	20.52	20.43	20.81	22.08	27.49	36.57	34.73	35.57	36.43	36.83
1/21/2010 0:00	34.52	32.23	28.69	27.68	28.03	37.19	51.36	44.55	39.09	31.54	26.20	23.64
1/22/2010 0:00	22.55	21.12	20.77	20.71	21.21	23.43	30.00	45.06	41.17	40.50	41.22	38.47
1/22/2010 0:00	33.79	31.91	28.52	27.10	27.01	33.66	41.36	35.82	31.06	27.68	24.28	22.42
1/23/2010 0:00	21.46	20.67	19.72	19.12	19.23	19.53	21.55	24.40	26.70	32.88	30.37	28.39
1/23/2010 0:00	26.69	25.37	24.06	22.68	23.46	29.52	43.43	32.32	30.00	26.28	23.03	20.70
1/24/2010 0:00	19.41	18.00	17.50	16.99	16.97	16.84	17.87	19.94	21.06	23.00	24.15	24.01
1/24/2010 0:00	24.01	23.24	21.78	21.02	22.06	28.95	39.12	35.33	33.15	27.37	22.83	19.90
1/25/2010 0:00	18.12	16.93	17.03	16.79	17.71	20.31	26.21	35.94	34.35	38.08	38.09	38.10
1/25/2010 0:00	34.34	31.32	29.43	27.50	29.17	38.24	53.48	48.14	40.76	35.29	26.73	23.21
1/26/2010 0:00	22.82	21.65	21.27	21.21	21.73	24.86	35.26	50.72	47.97	48.52	49.24	49.26
1/26/2010 0:00	46.57	44.93	40.00	35.30	39.07	51.65	70.96	65.28	55.17	50.56	39.62	30.28
1/27/2010 0:00	27.26	25.60	24.90	24.58	24.97	26.87	43.79	64.06	58.87	58.07	53.42	50.10
1/27/2010 0:00	48.80	42.75	35.67	32.21	32.99	51.11	69.46	59.15	52.96	43.73	35.38	27.91
1/28/2010 0:00	26.05	25.01	23.94	23.64	24.70	27.37	39.81	51.65	50.61	50.98	50.77	49.30
1/28/2010 0:00	47.71	43.47	38.15	34.54	35.59	48.91	63.54	58.62	54.14	49.30	41.85	38.99
1/29/2010 0:00	32.08	30.19	29.13	28.74	29.82	34.19	48.67	68.31	59.10	58.69	56.62	51.73
1/29/2010 0:00	49.16	48.47	41.11	35.52	35.85	48.78	65.71	57.89	51.87	46.81	38.60	34.06
1/30/2010 0:00	33.50	33.07	31.81	29.77	29.48	29.19	33.96	39.86	42.78	51.77	53.62	47.28
1/30/2010 0:00	41.80	38.04	33.03	30.52	30.65	42.26	63.92	54.89	49.51	40.85	35.70	34.36
1/31/2010 0:00	32.50	31.55	29.97	28.91	28.24	27.63	29.90	32.82	35.11	42.67	42.00	39.22
1/31/2010 0:00	35.50	32.42	29.58	28.67	28.83	40.45	59.92	51.31	47.35	41.43	36.09	30.63

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
2/1/2010 0:00	26.70	26.39	25.94	25.90	26.48	27.86	46.46	66.10	57.49	54.67	49.65	47.58
2/1/2010 0:00	43.67	40.43	35.47	32.19	33.32	41.42	64.76	58.44	48.66	45.85	33.44	29.32
2/2/2010 0:00	26.92	25.75	25.05	25.05	25.67	26.88	42.82	55.94	50.72	50.01	48.14	46.57
2/2/2010 0:00	42.94	39.51	34.59	31.28	32.22	39.19	57.98	53.26	47.48	44.51	33.57	29.50
2/3/2010 0:00	26.28	25.45	24.31	24.04	24.64	26.40	38.71	53.07	51.65	48.28	47.32	44.17
2/3/2010 0:00	39.68	36.82	33.26	30.55	31.39	37.56	55.56	51.71	46.82	41.73	31.02	28.24
2/4/2010 0:00	26.55	24.93	24.68	24.53	24.80	27.72	41.88	53.60	51.43	50.02	48.50	47.14
2/4/2010 0:00	42.07	36.94	35.01	32.48	32.44	37.90	54.04	51.79	47.17	41.26	30.01	27.80
2/5/2010 0:00	25.02	24.22	23.72	23.54	23.61	24.38	30.86	47.47	44.55	46.08	44.00	42.57
2/5/2010 0:00	42.20	38.42	34.13	30.87	30.41	33.36	45.79	43.02	42.14	35.18	27.61	26.81
2/6/2010 0:00	27.42	26.82	25.70	25.07	25.03	25.78	27.97	33.95	37.85	45.47	50.01	46.97
2/6/2010 0:00	42.39	34.68	33.08	30.87	31.43	40.36	57.24	55.24	54.48	47.40	38.38	33.44
2/7/2010 0:00	32.91	31.62	29.94	28.76	28.52	27.64	30.04	34.25	35.36	39.04	39.28	38.13
2/7/2010 0:00	36.35	34.05	31.33	30.13	31.60	39.13	50.54	52.53	49.32	45.11	37.65	31.84
2/8/2010 0:00	27.35	27.40	27.12	26.73	26.98	29.47	45.16	59.05	53.12	52.97	52.69	51.09
2/8/2010 0:00	47.07	40.93	36.56	33.55	35.42	42.04	68.12	62.75	52.96	48.26	33.75	30.93
2/9/2010 0:00	25.85	25.33	24.57	24.65	25.16	27.15	38.04	51.75	50.32	49.28	50.21	50.08
2/9/2010 0:00	45.66	41.50	38.31	34.27	34.33	41.44	57.85	54.06	48.66	42.34	34.79	29.28
2/10/2010 0:00	27.81	27.12	26.49	26.33	26.87	28.83	43.94	57.07	54.22	54.17	54.01	52.40
2/10/2010 0:00	49.38	44.08	39.42	34.85	35.68	41.70	65.06	66.33	52.46	46.44	40.33	33.11
2/11/2010 0:00	32.23	30.89	29.31	29.26	29.65	31.31	48.10	59.32	59.53	58.89	55.49	51.25
2/11/2010 0:00	47.41	41.95	38.86	34.50	34.50	39.26	59.56	64.19	52.69	43.43	41.49	38.03
2/12/2010 0:00	29.27	28.42	27.36	27.30	27.71	28.45	41.34	55.87	53.34	51.81	50.82	45.45
2/12/2010 0:00	41.68	37.68	35.39	31.09	30.44	32.99	49.01	49.39	44.70	37.85	33.48	30.80
2/13/2010 0:00	28.44	28.78	27.28	26.98	26.47	26.77	29.06	33.64	36.66	40.81	41.75	39.01
2/13/2010 0:00	35.83	31.18	29.33	27.87	28.34	30.57	42.06	41.94	40.21	36.75	31.18	28.03
2/14/2010 0:00	29.72	30.91	29.15	27.36	26.35	25.70	26.69	26.72	27.11	30.43	29.92	29.52
2/14/2010 0:00	28.46	27.43	24.97	24.31	24.61	28.11	40.26	42.79	39.39	34.24	27.89	25.41
2/15/2010 0:00	23.40	23.09	22.89	22.48	23.00	23.93	32.52	45.79	48.06	49.51	49.58	49.44
2/15/2010 0:00	45.98	40.78	37.38	32.52	32.90	37.71	57.00	62.51	49.50	44.38	33.93	28.04
2/16/2010 0:00	24.63	24.01	23.85	23.48	23.86	25.73	36.16	48.98	46.90	47.58	47.09	39.90
2/16/2010 0:00	37.67	35.77	32.34	29.53	29.27	31.71	48.81	55.27	48.36	38.33	32.83	28.23
2/17/2010 0:00	24.69	24.90	24.48	24.22	25.10	27.40	37.73	54.18	53.43	53.42	53.41	53.40
2/17/2010 0:00	43.06	41.82	36.19	31.06	32.08	37.60	53.91	62.42	52.75	50.44	38.03	29.04
2/18/2010 0:00	26.10	25.48	24.99	24.89	25.62	27.58	37.32	53.91	53.49	52.70	51.76	47.80
2/18/2010 0:00	41.92	38.38	34.16	30.17	29.91	33.62	51.38	56.67	52.05	41.96	31.78	28.12
2/19/2010 0:00	26.41	25.47	24.78	24.64	25.25	26.91	39.45	52.39	52.22	51.59	49.61	44.84
2/19/2010 0:00	43.50	38.92	35.02	30.78	30.79	34.94	49.11	52.23	48.82	41.15	36.44	31.01
2/20/2010 0:00	28.51	27.63	26.80	25.50	25.03	26.37	27.94	30.45	35.24	43.46	45.04	41.97
2/20/2010 0:00	33.94	29.31	28.44	26.78	27.16	29.29	39.45	45.06	39.49	35.90	30.81	27.61
2/21/2010 0:00	24.19	24.38	23.32	22.30	21.60	22.04	23.43	23.77	24.72	26.73	26.63	26.44
2/21/2010 0:00	26.10	25.38	24.62	23.75	24.26	27.75	39.00	43.83	38.22	30.39	25.72	23.92
2/22/2010 0:00	22.65	22.84	22.22	22.20	22.38	24.17	33.95	45.57	45.99	48.26	46.75	45.61
2/22/2010 0:00	41.33	40.19	36.51	33.04	34.95	39.99	56.58	63.45	50.06	41.81	31.60	26.71
2/23/2010 0:00	26.88	26.23	25.54	25.53	25.52	27.96	39.49	48.72	48.37	49.11	46.42	42.40
2/23/2010 0:00	38.05	34.50	33.15	30.25	30.29	33.94	48.46	56.11	46.46	40.24	32.29	28.87
2/24/2010 0:00	27.24	26.77	26.47	26.44	27.04	30.93	38.21	51.44	50.12	50.80	49.19	46.95
2/24/2010 0:00	42.42	41.25	38.25	33.25	33.35	35.98	51.66	59.71	49.17	45.82	36.84	30.98
2/25/2010 0:00	29.48	29.55	28.25	28.00	28.45	31.68	44.89	52.83	47.64	48.37	47.41	46.40
2/25/2010 0:00	42.21	43.05	38.96	33.43	32.90	37.64	51.11	61.81	51.36	46.49	38.59	37.15
2/26/2010 0:00	32.35	31.34	29.40	28.61	28.62	29.44	40.69	52.19	50.05	48.67	47.61	45.30
2/26/2010 0:00	41.66	38.79	35.43	31.73	31.30	33.22	46.54	48.56	45.34	38.40	37.12	31.79
2/27/2010 0:00	31.76	31.80	30.75	29.59	28.03	28.78	30.62	35.45	45.25	50.53	49.55	45.41
2/27/2010 0:00	39.27	34.80	31.15	29.75	29.63	32.73	49.47	51.64	47.97	45.50	37.85	31.13
2/28/2010 0:00	31.82	31.78	30.55	28.82	27.24	27.98	29.93	34.01	37.98	44.23	42.00	41.20
2/28/2010 0:00	36.11	35.61	33.08	31.24	31.45	34.23	45.47	51.02	47.45	45.17	36.36	30.65

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
3/1/2010 0:00	28.48	27.60	27.13	27.01	27.41	32.76	42.38	49.64	51.31	54.80	50.50	50.71
3/1/2010 0:00	46.47	44.44	41.05	37.70	36.76	39.36	53.99	61.57	52.39	44.12	36.11	34.30
3/2/2010 0:00	30.40	28.81	28.03	27.73	28.51	34.03	44.55	49.56	50.97	51.15	51.71	49.20
3/2/2010 0:00	44.80	42.67	41.17	37.90	34.67	38.18	49.57	61.64	48.49	44.70	36.60	34.22
3/3/2010 0:00	29.49	27.99	27.54	27.10	28.44	33.15	43.58	46.41	46.83	46.43	45.36	44.38
3/3/2010 0:00	40.39	37.83	36.30	32.49	32.24	34.71	44.46	48.69	44.39	41.53	33.80	31.56
3/4/2010 0:00	30.10	29.10	28.92	28.92	30.24	34.46	47.23	52.70	51.67	51.02	51.88	48.47
3/4/2010 0:00	44.11	42.49	38.36	32.14	31.33	32.76	43.62	53.61	48.34	42.83	33.56	29.13
3/5/2010 0:00	28.18	26.29	26.09	26.09	26.88	28.96	37.65	44.16	44.82	44.23	42.69	41.14
3/5/2010 0:00	35.72	32.30	30.02	26.88	26.20	27.31	33.83	41.88	37.44	32.29	26.54	25.98
3/6/2010 0:00	25.95	25.27	24.85	23.70	23.46	23.84	25.46	27.26	31.75	33.97	34.11	30.72
3/6/2010 0:00	27.38	24.89	23.98	23.38	23.33	24.41	28.93	35.09	30.62	29.11	25.49	23.38
3/7/2010 0:00	23.50	23.38	23.02	22.58	22.28	22.67	23.54	23.92	25.11	26.00	25.72	25.35
3/7/2010 0:00	24.51	24.01	23.21	22.56	23.09	24.47	31.17	40.03	33.21	29.04	23.91	22.36
3/8/2010 0:00	21.21	20.55	20.51	21.14	22.07	24.33	35.64	35.53	38.82	40.10	37.08	36.03
3/8/2010 0:00	34.18	31.19	27.83	26.24	25.83	26.74	32.41	41.80	35.62	28.61	23.52	22.68
3/9/2010 0:00	21.42	20.56	20.49	20.67	21.79	24.87	34.13	34.83	36.20	35.43	35.19	33.99
3/9/2010 0:00	32.54	29.95	28.10	26.74	26.49	27.55	33.39	39.84	34.12	28.22	23.42	22.06
3/10/2010 0:00	21.25	20.40	20.38	20.33	21.32	24.11	33.63	35.79	39.92	40.06	40.06	37.85
3/10/2010 0:00	38.60	35.66	32.37	29.31	28.77	31.13	41.60	47.84	40.89	34.28	25.72	22.42
3/11/2010 0:00	20.20	19.10	18.94	18.97	19.60	22.64	30.42	33.18	30.87	30.59	29.71	31.55
3/11/2010 0:00	30.95	30.33	28.26	26.31	26.02	26.63	33.12	37.53	33.14	27.94	23.06	21.31
3/12/2010 0:00	18.01	17.64	17.91	17.81	18.46	21.99	30.83	36.29	39.17	39.17	39.93	38.11
3/12/2010 0:00	39.86	36.30	33.72	28.97	28.16	28.37	36.27	39.68	34.90	27.96	22.74	20.52
3/13/2010 0:00	20.87	20.65	20.12	19.54	19.23	19.66	22.45	24.56	27.29	29.69	30.05	29.29
3/13/2010 0:00	28.48	27.80	26.80	25.92	25.83	27.30	30.90	39.35	29.59	27.61	24.84	21.87
3/14/2010 0:00	21.06	20.74	20.60	20.36	20.25	21.07	23.59	24.03	25.52	26.87	27.40	27.27
3/14/2010 0:00	26.87	26.85	25.65	25.54	26.56	28.63	34.26	47.62	35.14	28.71	24.05	21.70
3/15/2010 0:00	20.81	20.37	20.20	20.32	21.40	32.45	45.21	39.74	40.16	39.83	38.42	37.83
3/15/2010 0:00	37.58	35.43	33.99	32.26	29.88	30.14	38.63	49.17	37.82	28.89	25.38	22.24
3/16/2010 0:00	20.07	20.34	20.34	20.45	22.19	29.09	37.74	40.79	39.29	39.28	39.15	38.27
3/16/2010 0:00	38.92	32.84	29.62	27.94	27.66	27.74	34.73	41.65	36.55	27.29	22.93	21.25
3/17/2010 0:00	21.72	21.04	21.02	21.20	23.84	33.35	43.73	39.71	39.63	39.59	39.60	39.60
3/17/2010 0:00	36.83	33.48	31.40	28.62	27.86	27.80	32.67	39.59	33.36	26.82	23.53	21.14
3/18/2010 0:00	20.21	19.29	19.54	19.71	20.91	30.24	41.02	37.84	37.30	37.22	37.22	35.06
3/18/2010 0:00	32.25	30.11	27.78	26.95	26.10	26.06	29.96	40.41	31.70	26.50	22.91	20.77
3/19/2010 0:00	19.80	19.04	18.98	19.33	20.74	27.57	36.91	34.55	34.17	33.74	31.78	30.49
3/19/2010 0:00	30.60	28.72	27.47	25.52	24.85	24.35	27.36	35.72	30.29	25.53	22.14	20.91
3/20/2010 0:00	20.66	20.20	20.06	19.76	20.19	22.30	26.16	27.68	32.45	35.21	35.93	35.65
3/20/2010 0:00	32.49	28.62	26.53	26.04	26.38	27.84	31.48	38.63	35.11	29.51	23.10	23.06
3/21/2010 0:00	21.50	20.88	21.24	20.68	20.91	22.99	25.47	25.36	27.33	27.67	27.84	27.25
3/21/2010 0:00	27.12	25.29	24.29	24.57	25.40	26.79	31.22	41.39	35.05	28.30	23.01	22.05
3/22/2010 0:00	21.74	21.37	21.43	21.74	23.78	31.96	43.75	42.00	41.46	40.71	39.94	37.53
3/22/2010 0:00	35.07	31.84	31.27	28.83	28.02	28.62	33.56	44.46	35.63	27.53	23.53	21.97
3/23/2010 0:00	21.71	21.08	21.09	21.49	23.64	31.21	45.14	38.21	37.27	37.14	36.61	35.96
3/23/2010 0:00	33.91	32.12	27.73	26.03	25.55	25.26	27.20	38.18	31.36	26.70	22.92	21.70
3/24/2010 0:00	21.13	20.66	20.60	20.87	22.82	30.09	44.68	37.92	37.91	36.67	37.88	35.17
3/24/2010 0:00	33.61	32.52	28.76	27.39	26.34	26.16	28.64	38.03	33.54	27.54	22.39	20.90
3/25/2010 0:00	19.48	18.77	18.76	18.91	20.51	28.04	37.44	35.37	35.39	34.94	35.46	34.25
3/25/2010 0:00	33.45	31.70	30.23	27.75	27.30	27.81	32.03	40.92	36.51	28.07	24.20	22.54
3/26/2010 0:00	21.14	20.13	20.50	21.08	23.64	30.79	42.62	40.44	39.55	38.71	36.39	32.89
3/26/2010 0:00	31.90	30.07	26.75	24.83	24.34	24.13	26.69	36.72	29.85	24.89	22.08	21.22
3/27/2010 0:00	21.87	21.11	20.80	20.77	21.07	23.44	27.13	28.20	31.79	33.67	32.67	30.22
3/27/2010 0:00	27.28	25.58	24.57	24.01	23.83	24.69	26.99	33.67	28.75	25.34	20.99	19.62
3/28/2010 0:00	19.20	19.01	18.93	18.66	18.75	19.22	21.87	22.27	23.42	24.30	24.90	24.56
3/28/2010 0:00	24.71	23.64	22.72	22.84	23.42	23.91	27.47	35.72	32.00	26.65	22.49	20.87
3/29/2010 0:00	19.93	19.64	19.80	19.66	21.62	29.17	45.26	44.65	40.87	40.10	40.84	37.75
3/29/2010 0:00	33.24	33.50	30.43	29.38	28.01	28.21	31.31	41.30	35.60	27.03	23.85	22.19
3/30/2010 0:00	20.52	19.67	19.42	19.91	21.52	29.91	39.72	36.00	35.33	35.67	35.82	31.67
3/30/2010 0:00	30.31	28.52	26.67	25.75	25.05	24.82	26.50	34.81	29.94	24.90	21.70	20.47
3/31/2010 0:00	16.86	15.83	15.91	16.13	17.35	27.03	31.30	29.98	31.93	33.13	33.44	31.42
3/31/2010 0:00	31.18	29.41	28.26	26.93	25.99	25.94	26.87	34.71	29.01	24.26	20.09	18.51

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
4/1/2010 0:00	16.21	15.16	14.61	15.00	17.74	28.21	29.81	30.10	30.60	31.17	31.42	31.14
4/1/2010 0:00	30.76	30.51	29.73	28.20	27.15	24.72	24.98	27.25	25.26	22.63	17.57	16.14
4/2/2010 0:00	13.48	11.21	10.63	11.29	12.84	22.92	23.24	24.99	26.14	27.09	27.40	26.95
4/2/2010 0:00	27.37	27.18	27.41	26.40	25.49	24.72	24.44	26.49	25.52	21.80	18.41	17.03
4/3/2010 0:00	10.93	9.39	7.99	8.38	9.18	11.78	17.92	20.93	23.54	23.94	24.30	24.46
4/3/2010 0:00	24.41	23.93	23.22	23.14	23.43	23.07	23.28	26.80	24.76	22.52	14.96	13.01
4/4/2010 0:00	12.71	11.45	9.26	9.01	10.40	13.67	17.40	20.08	21.11	21.45	22.16	21.98
4/4/2010 0:00	21.51	21.10	20.61	20.58	21.11	21.38	22.44	28.93	25.34	23.05	18.75	16.64
4/5/2010 0:00	16.53	16.28	16.00	16.33	17.35	28.22	30.04	33.90	39.74	39.75	39.67	40.25
4/5/2010 0:00	40.74	41.40	37.66	35.55	33.94	28.55	28.81	35.51	30.93	25.11	21.26	18.36
4/6/2010 0:00	16.34	15.11	14.56	14.78	17.08	25.22	28.24	30.73	32.00	35.40	36.84	36.07
4/6/2010 0:00	39.85	39.64	38.35	38.28	36.15	30.33	28.66	34.81	32.08	24.56	18.86	17.24
4/7/2010 0:00	16.79	15.18	14.33	14.63	16.54	21.91	26.95	31.28	33.40	35.06	35.88	35.13
4/7/2010 0:00	38.52	38.91	35.30	35.12	33.39	28.80	29.20	35.24	32.17	26.08	20.41	18.48
4/8/2010 0:00	17.63	16.87	16.71	16.56	18.29	25.44	36.95	41.00	40.96	41.46	41.03	41.12
4/8/2010 0:00	41.33	40.70	35.03	33.65	31.86	29.15	31.11	41.10	39.57	28.06	22.56	20.90
4/9/2010 0:00	20.79	19.39	19.23	19.57	21.51	31.43	38.21	37.12	38.13	37.61	36.47	33.18
4/9/2010 0:00	33.38	31.15	26.90	26.04	25.20	24.13	24.69	34.68	31.25	25.76	23.35	21.54
4/10/2010 0:00	20.87	20.45	20.19	20.19	20.82	23.51	25.86	30.24	36.08	37.08	35.85	36.57
4/10/2010 0:00	30.96	28.23	25.83	25.33	25.83	25.55	26.30	36.73	35.58	27.58	23.20	20.97
4/11/2010 0:00	20.87	20.43	20.11	20.07	20.27	21.10	22.03	24.48	26.95	26.93	27.52	27.05
4/11/2010 0:00	26.43	25.64	24.95	24.91	25.33	25.64	27.18	37.75	31.79	26.07	22.15	19.86
4/12/2010 0:00	19.71	19.07	19.11	19.58	21.48	30.25	35.39	38.52	41.78	41.81	41.43	41.56
4/12/2010 0:00	40.41	37.64	33.80	31.48	29.36	27.21	27.63	37.12	34.68	24.58	22.61	20.00
4/13/2010 0:00	19.47	18.58	18.45	18.67	20.94	29.98	32.72	36.29	36.92	38.23	37.82	38.90
4/13/2010 0:00	39.62	40.08	35.39	33.57	31.37	27.41	27.60	37.23	34.14	24.96	22.38	19.97
4/14/2010 0:00	17.03	15.28	14.75	15.19	19.28	30.43	32.50	33.02	37.74	39.74	38.98	39.66
4/14/2010 0:00	38.50	38.47	38.36	38.35	38.32	32.53	32.24	38.82	38.30	27.42	23.35	20.45
4/15/2010 0:00	18.26	16.44	15.99	16.37	18.55	31.23	33.25	35.38	37.22	39.21	41.85	42.90
4/15/2010 0:00	42.58	43.87	43.18	42.07	41.61	37.69	36.02	44.64	41.43	30.28	23.74	20.35
4/16/2010 0:00	20.56	19.15	18.86	18.99	21.39	30.82	36.06	41.87	40.82	41.97	42.21	41.39
4/16/2010 0:00	41.60	39.83	35.87	33.32	31.65	26.78	26.29	39.20	35.83	26.55	22.48	21.66
4/17/2010 0:00	21.61	20.77	20.46	20.49	20.97	22.84	24.91	33.11	39.84	39.16	38.80	35.00
4/17/2010 0:00	33.13	29.04	26.94	26.11	26.34	26.06	26.83	42.46	38.62	33.74	23.45	22.62
4/18/2010 0:00	22.68	22.03	21.75	21.56	21.47	22.71	23.85	24.77	27.66	29.40	29.22	28.27
4/18/2010 0:00	27.48	26.83	25.46	25.14	25.83	26.62	28.19	45.56	40.38	28.89	22.98	22.08
4/19/2010 0:00	21.76	20.73	20.75	21.26	22.71	33.72	40.24	40.00	41.67	41.61	41.62	41.38
4/19/2010 0:00	41.73	42.72	38.16	35.18	33.76	30.07	29.13	40.11	40.15	28.59	23.75	21.66
4/20/2010 0:00	21.91	20.91	20.96	21.32	22.81	32.33	39.70	40.51	41.65	41.98	42.04	41.97
4/20/2010 0:00	42.03	42.43	41.94	40.36	36.70	31.66	27.71	41.89	42.02	31.11	24.48	22.29
4/21/2010 0:00	23.45	23.04	22.82	23.31	24.81	29.38	33.86	35.07	37.11	37.00	36.92	36.34
4/21/2010 0:00	35.90	34.99	32.19	31.70	30.83	27.77	25.48	37.60	35.90	27.06	24.37	22.07
4/22/2010 0:00	22.43	21.72	21.88	23.21	24.42	28.82	36.34	41.36	42.32	41.80	41.57	41.48
4/22/2010 0:00	41.41	41.35	40.16	36.18	34.05	28.75	27.08	38.76	39.13	28.13	24.19	22.51
4/23/2010 0:00	21.20	19.62	19.18	19.60	21.66	29.12	35.01	35.01	37.45	37.46	37.58	37.82
4/23/2010 0:00	36.41	35.73	31.04	31.20	30.18	25.38	24.45	34.58	29.69	24.45	22.38	19.80
4/24/2010 0:00	19.05	19.39	19.12	19.24	19.45	20.42	21.33	24.24	27.69	28.41	29.24	27.66
4/24/2010 0:00	26.83	25.21	23.98	23.67	24.12	23.78	23.62	32.36	27.68	24.72	20.24	19.22
4/25/2010 0:00	19.33	18.13	16.89	16.61	16.67	18.33	18.91	21.15	22.15	22.75	22.86	22.89
4/25/2010 0:00	22.98	22.91	22.66	22.55	23.29	23.24	23.84	31.52	26.68	23.55	21.67	21.58
4/26/2010 0:00	20.41	19.94	19.77	18.62	20.76	26.54	29.98	31.53	34.07	38.64	38.30	37.82
4/26/2010 0:00	37.35	36.12	32.28	30.92	30.31	28.87	28.55	35.11	33.29	27.28	24.52	22.41
4/27/2010 0:00	22.23	21.03	21.09	20.92	22.36	31.25	35.12	36.76	37.59	38.80	38.91	40.52
4/27/2010 0:00	39.79	39.07	38.15	33.54	32.08	28.58	29.60	38.29	39.19	30.29	24.46	24.84
4/28/2010 0:00	23.77	23.04	23.02	23.20	25.16	29.05	32.34	34.66	34.33	35.87	32.98	32.78
4/28/2010 0:00	30.85	30.45	28.52	27.60	27.37	25.91	26.36	31.24	29.87	25.82	23.30	20.12
4/29/2010 0:00	20.59	19.98	19.95	19.83	22.90	30.89	31.30	31.53	33.39	35.39	33.94	35.14
4/29/2010 0:00	33.84	33.35	31.32	30.45	29.41	28.09	28.10	35.27	39.31	27.04	22.80	21.59
4/30/2010 0:00	20.43	21.22	21.33	20.86	20.86	26.48	30.96	33.02	37.78	42.71	43.94	45.85
4/30/2010 0:00	46.01	45.77	45.05	44.37	39.83	34.64	29.85	37.22	39.68	27.76	23.42	21.79

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
5/1/2010 0:00	20.59	20.34	21.93	21.74	21.83	22.88	22.66	26.96	30.55	32.52	34.79	34.77
5/1/2010 0:00	32.64	31.32	30.47	30.67	31.26	30.43	29.20	36.34	37.79	29.86	22.99	21.57
5/2/2010 0:00	20.69	19.44	20.07	21.87	22.60	20.44	22.98	23.07	26.25	28.94	29.42	29.72
5/2/2010 0:00	30.16	29.44	29.03	28.26	28.67	28.98	29.25	35.76	38.56	31.05	28.76	23.61
5/3/2010 0:00	21.00	21.88	20.45	20.37	20.28	25.81	29.16	32.88	34.56	39.64	40.62	41.27
5/3/2010 0:00	41.15	40.52	39.58	38.92	36.74	33.61	31.17	36.36	40.41	28.35	23.83	23.34
5/4/2010 0:00	23.46	21.58	20.52	21.18	22.18	26.04	31.73	34.18	36.47	42.04	45.32	48.67
5/4/2010 0:00	47.25	49.38	48.47	45.55	44.59	38.50	32.68	42.80	44.53	31.53	22.97	23.19
5/5/2010 0:00	22.16	21.12	20.20	20.67	23.02	27.16	31.53	33.72	35.21	40.21	40.88	45.04
5/5/2010 0:00	45.43	45.94	45.70	47.80	45.66	39.62	33.25	41.78	45.54	30.28	25.60	23.60
5/6/2010 0:00	22.34	21.86	20.86	21.50	22.04	27.36	31.41	35.91	38.14	40.85	42.17	42.41
5/6/2010 0:00	42.28	42.47	41.87	41.16	38.94	36.30	32.17	39.80	42.00	28.33	25.13	21.96
5/7/2010 0:00	20.93	20.93	20.43	20.81	20.79	25.46	29.04	32.58	33.59	35.87	36.51	36.34
5/7/2010 0:00	36.92	38.02	37.14	33.82	30.10	26.73	25.70	29.53	33.75	25.40	21.81	20.47
5/8/2010 0:00	20.24	19.71	20.16	20.71	21.23	22.51	23.40	28.71	30.90	33.15	34.22	34.72
5/8/2010 0:00	32.37	30.98	29.48	28.47	28.98	29.40	27.62	34.71	37.86	29.51	23.81	21.80
5/9/2010 0:00	21.22	21.79	20.92	20.79	20.40	20.56	22.17	26.04	25.98	27.10	26.97	25.66
5/9/2010 0:00	25.22	24.59	24.33	24.15	24.56	24.91	25.46	29.23	36.43	26.58	24.56	22.94
5/10/2010 0:00	21.43	20.85	20.83	20.15	21.51	26.43	31.36	32.71	34.46	36.53	37.18	35.76
5/10/2010 0:00	34.46	34.13	32.42	29.74	29.63	28.96	27.80	29.43	35.00	26.27	24.07	22.18
5/11/2010 0:00	19.97	18.83	18.65	19.11	19.87	24.76	27.85	31.03	33.12	35.32	34.73	34.88
5/11/2010 0:00	34.97	35.17	35.06	32.02	30.55	30.07	28.27	31.01	36.72	27.24	22.35	20.52
5/12/2010 0:00	23.37	22.89	22.42	22.79	25.13	26.10	31.12	32.70	37.73	38.53	38.37	39.10
5/12/2010 0:00	37.14	36.82	37.55	35.10	33.95	31.63	30.26	33.62	38.03	30.19	25.41	23.27
5/13/2010 0:00	23.77	22.98	22.36	22.69	22.51	28.58	35.72	38.85	43.07	43.70	44.76	44.38
5/13/2010 0:00	44.64	44.88	45.15	45.24	44.13	41.44	36.36	40.72	44.38	33.43	25.39	24.07
5/14/2010 0:00	23.58	21.36	20.74	20.45	21.67	27.33	32.06	37.16	40.55	41.81	42.57	42.74
5/14/2010 0:00	41.90	40.44	39.01	37.13	36.80	32.93	31.13	33.53	36.98	30.13	24.39	24.10
5/15/2010 0:00	24.44	24.27	20.87	20.37	20.66	21.42	22.88	27.80	30.54	32.49	33.47	32.44
5/15/2010 0:00	31.63	29.00	28.63	27.68	28.17	27.90	26.91	28.86	34.89	27.32	23.18	22.35
5/16/2010 0:00	20.41	19.44	18.90	18.69	19.19	19.55	21.03	22.74	24.12	24.43	25.27	25.67
5/16/2010 0:00	25.56	25.43	25.20	25.13	26.11	26.24	26.54	28.88	35.74	26.38	21.91	19.94
5/17/2010 0:00	20.08	19.43	19.19	19.69	20.85	26.65	31.84	38.24	41.72	44.15	43.80	43.87
5/17/2010 0:00	44.72	43.74	44.38	42.84	39.49	35.44	34.22	35.61	42.04	32.94	24.66	24.11
5/18/2010 0:00	22.85	21.77	21.51	21.79	22.79	27.20	31.83	37.82	40.19	42.33	43.07	43.30
5/18/2010 0:00	43.26	42.01	41.69	39.48	37.83	34.08	31.43	33.52	39.28	29.52	26.78	23.35
5/19/2010 0:00	21.21	19.88	19.65	19.50	20.48	25.23	28.65	31.81	34.59	35.90	35.23	36.29
5/19/2010 0:00	36.90	35.16	35.08	34.82	33.78	30.70	28.32	29.75	34.37	28.06	24.37	21.54
5/20/2010 0:00	23.27	21.49	21.11	21.05	24.02	26.97	29.38	32.48	36.12	37.36	38.36	40.60
5/20/2010 0:00	40.49	40.90	39.86	39.84	37.07	35.18	31.90	32.17	36.41	30.47	25.37	23.44
5/21/2010 0:00	21.69	20.47	19.99	20.22	21.21	24.17	30.03	33.95	38.49	40.96	43.22	41.85
5/21/2010 0:00	42.90	41.76	40.85	40.32	39.63	34.73	31.34	31.80	35.45	30.25	25.57	22.84
5/22/2010 0:00	23.30	22.81	21.83	21.43	21.66	21.93	25.38	28.55	27.70	29.99	31.02	31.57
5/22/2010 0:00	32.03	32.41	32.96	34.18	36.01	35.34	31.22	30.64	37.01	29.69	24.24	21.65
5/23/2010 0:00	19.85	19.64	18.19	17.34	18.07	17.47	20.74	23.17	26.39	29.14	32.37	33.92
5/23/2010 0:00	36.36	41.56	45.88	47.17	48.85	51.20	48.23	45.68	50.45	43.23	27.46	24.70
5/24/2010 0:00	22.37	20.84	19.65	19.86	21.29	23.88	28.40	31.87	35.43	40.08	44.71	47.75
5/24/2010 0:00	54.27	60.88	62.71	64.76	60.83	57.10	50.91	48.60	51.32	41.88	30.19	27.54
5/25/2010 0:00	26.20	23.38	21.56	21.56	23.79	27.83	33.55	39.39	41.21	48.29	52.07	56.58
5/25/2010 0:00	62.14	69.80	71.17	72.83	69.23	65.12	59.28	56.03	56.17	45.28	32.44	29.62
5/26/2010 0:00	26.17	23.00	21.92	21.85	23.70	27.49	32.06	36.70	38.95	43.39	49.13	53.83
5/26/2010 0:00	58.26	63.91	66.04	69.56	65.43	62.02	56.77	52.18	54.37	40.93	31.27	27.49
5/27/2010 0:00	24.27	23.15	22.74	22.67	23.15	25.36	27.98	30.68	34.64	40.36	43.93	48.54
5/27/2010 0:00	54.68	58.79	58.96	58.38	55.17	50.41	43.32	39.28	39.82	31.54	25.28	22.67
5/28/2010 0:00	24.12	21.83	20.73	20.46	22.18	24.26	25.74	27.22	29.55	33.50	37.37	37.87
5/28/2010 0:00	41.90	45.26	46.85	48.56	45.50	40.36	34.33	31.61	33.40	28.69	23.80	21.29
5/29/2010 0:00	20.51	20.58	19.23	18.33	18.56	17.79	21.61	23.19	24.13	27.98	32.30	33.22
5/29/2010 0:00	35.70	38.68	41.30	44.75	47.46	44.66	38.43	35.73	39.67	31.08	23.37	21.77
5/30/2010 0:00	18.86	17.06	15.73	13.99	14.82	11.93	16.08	20.32	22.09	25.20	32.72	35.33
5/30/2010 0:00	39.71	40.98	41.72	45.09	49.60	46.69	41.16	37.90	40.97	33.28	25.32	24.72
5/31/2010 0:00	23.84	21.55	19.60	19.15	18.89	15.37	18.02	23.48	23.06	27.28	34.95	37.16
5/31/2010 0:00	38.35	39.25	40.25	41.23	43.88	41.59	36.44	33.51	41.23	28.77	23.32	22.45

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
6/1/2010 0:00	21.34	19.32	18.62	18.65	19.43	23.55	32.27	33.64	35.49	44.05	51.15	55.54
6/1/2010 0:00	59.47	62.47	62.15	64.83	61.87	55.25	50.85	47.10	48.96	35.17	24.89	22.43
6/2/2010 0:00	22.66	21.33	20.53	20.31	21.11	23.31	26.27	30.20	35.28	43.33	48.75	52.36
6/2/2010 0:00	55.17	59.79	61.65	63.43	61.68	53.48	50.51	40.19	47.95	35.38	27.86	24.03
6/3/2010 0:00	22.87	21.64	20.82	20.84	22.09	24.17	30.23	31.18	33.57	39.26	44.02	43.63
6/3/2010 0:00	47.23	51.11	50.37	51.95	49.58	45.37	41.05	37.42	41.02	32.73	28.10	23.47
6/4/2010 0:00	21.10	19.88	19.23	18.99	19.65	20.51	24.02	26.97	31.26	37.18	42.22	43.88
6/4/2010 0:00	48.66	51.98	52.20	52.32	54.02	46.27	41.87	37.51	41.07	32.62	26.88	23.56
6/5/2010 0:00	22.78	20.99	20.33	19.73	19.84	20.27	21.97	24.47	26.97	34.66	38.28	41.07
6/5/2010 0:00	41.36	43.60	45.94	46.21	45.36	40.69	36.43	32.16	35.37	30.01	24.61	22.03
6/6/2010 0:00	21.09	20.22	19.59	19.30	18.47	17.78	18.23	21.23	21.69	23.03	24.23	26.10
6/6/2010 0:00	26.83	28.15	29.24	29.79	29.81	28.40	27.42	26.46	30.55	25.24	22.22	20.50
6/7/2010 0:00	18.92	16.66	16.16	17.33	19.25	21.05	25.58	29.45	33.61	41.64	44.24	45.39
6/7/2010 0:00	46.52	46.36	46.57	47.70	45.78	43.85	38.65	35.26	41.12	30.08	23.72	21.30
6/8/2010 0:00	21.30	20.37	19.63	19.55	20.49	22.01	26.32	29.30	32.96	37.47	40.73	44.52
6/8/2010 0:00	44.98	44.07	43.80	43.69	44.03	41.32	37.75	35.70	39.05	31.80	25.97	22.70
6/9/2010 0:00	20.85	18.92	18.37	18.45	19.61	21.98	26.13	30.01	31.69	36.60	40.43	40.82
6/9/2010 0:00	41.39	45.31	46.34	46.77	45.54	42.41	39.86	37.57	42.60	34.58	27.22	23.19
6/10/2010 0:00	21.14	19.30	18.77	19.10	20.28	22.93	25.98	30.29	33.78	40.88	44.87	47.15
6/10/2010 0:00	48.40	50.87	50.60	49.42	48.84	45.48	44.32	41.08	44.55	33.73	25.21	22.11
6/11/2010 0:00	20.27	17.67	16.20	16.01	16.93	20.94	25.66	28.27	32.40	37.24	43.46	47.15
6/11/2010 0:00	48.46	54.07	53.15	56.86	53.64	50.97	44.80	42.56	44.12	40.18	30.51	26.77
6/12/2010 0:00	22.82	21.37	20.31	19.72	19.67	20.46	22.01	26.56	32.68	37.58	46.14	49.87
6/12/2010 0:00	52.91	55.96	57.89	61.75	58.56	53.76	48.38	43.99	45.76	38.97	29.24	25.98
6/13/2010 0:00	23.13	21.02	18.98	16.54	16.56	15.80	18.65	21.73	24.92	31.53	37.43	40.81
6/13/2010 0:00	44.25	45.04	51.47	51.36	53.53	48.23	44.48	42.10	43.64	36.00	28.03	23.30
6/14/2010 0:00	19.53	17.56	16.61	16.74	18.30	20.14	25.60	29.08	34.28	41.43	47.13	50.29
6/14/2010 0:00	54.68	58.85	56.55	53.86	49.96	45.08	40.89	40.62	40.59	31.46	24.82	22.05
6/15/2010 0:00	22.85	21.87	20.69	20.43	21.49	22.81	25.36	28.14	32.11	39.34	43.58	45.74
6/15/2010 0:00	47.61	48.55	49.43	49.63	47.54	45.75	41.85	40.92	43.59	35.93	29.43	24.03
6/16/2010 0:00	22.74	21.43	20.93	20.69	21.39	22.68	27.31	32.12	35.62	42.24	47.98	50.97
6/16/2010 0:00	56.89	61.17	62.11	64.99	62.57	54.21	47.56	45.06	45.95	40.02	28.78	23.54
6/17/2010 0:00	20.91	19.49	18.31	18.36	19.79	21.04	24.71	28.83	32.61	41.36	47.52	51.20
6/17/2010 0:00	55.04	63.29	64.34	67.02	64.44	57.56	48.87	46.07	47.14	40.44	29.83	24.32
6/18/2010 0:00	20.84	18.85	17.44	17.61	18.48	20.39	23.15	27.08	31.01	39.52	48.82	51.94
6/18/2010 0:00	56.49	66.35	70.86	76.44	70.26	61.75	51.90	47.49	47.53	38.79	30.09	26.03
6/19/2010 0:00	22.86	21.26	19.90	19.57	19.56	19.01	21.94	25.78	33.10	38.96	49.50	55.53
6/19/2010 0:00	59.02	63.21	64.26	69.72	65.66	61.79	54.98	48.44	48.16	40.47	29.12	25.01
6/20/2010 0:00	21.94	20.55	18.94	17.53	16.97	9.00	16.35	21.63	24.10	26.84	32.15	39.85
6/20/2010 0:00	45.73	48.16	52.26	54.37	56.41	50.55	48.09	44.30	45.84	38.22	27.10	24.22
6/21/2010 0:00	20.87	19.85	19.11	19.02	20.19	21.48	24.93	33.34	36.95	43.02	50.63	54.08
6/21/2010 0:00	61.62	70.96	73.93	80.76	74.37	65.00	56.04	50.58	50.30	45.05	31.24	27.69
6/22/2010 0:00	24.07	22.59	21.58	21.45	22.38	23.97	27.20	36.08	40.52	48.35	58.00	62.27
6/22/2010 0:00	68.04	78.55	83.61	91.91	84.68	77.33	67.54	61.62	62.87	51.38	38.41	32.32
6/23/2010 0:00	25.67	22.83	21.51	21.23	22.40	24.40	26.59	36.04	41.48	47.24	56.76	62.08
6/23/2010 0:00	69.85	77.48	81.51	88.20	79.31	72.62	65.45	58.68	59.38	47.15	35.65	30.28
6/24/2010 0:00	26.06	22.85	21.87	21.74	22.78	24.57	28.77	37.17	41.75	46.87	53.65	58.69
6/24/2010 0:00	66.43	71.11	77.24	81.67	74.68	67.03	58.60	49.72	50.14	41.81	32.54	27.83
6/25/2010 0:00	23.55	20.26	18.97	18.64	19.24	21.02	23.65	26.34	31.87	37.61	43.36	48.17
6/25/2010 0:00	52.41	58.71	63.52	67.63	62.76	57.18	47.77	42.23	43.11	36.57	27.22	24.40
6/26/2010 0:00	23.10	21.29	19.94	19.29	19.18	18.39	20.42	24.56	28.74	34.73	40.62	47.16
6/26/2010 0:00	51.72	54.07	58.97	67.84	64.71	60.66	53.53	47.51	46.83	40.46	30.05	25.51
6/27/2010 0:00	23.54	21.68	20.49	19.25	18.78	17.49	19.58	22.91	26.12	32.91	39.38	46.08
6/27/2010 0:00	50.53	53.97	57.89	62.06	63.06	58.81	55.96	49.64	48.83	42.57	32.54	25.86
6/28/2010 0:00	22.85	21.55	20.78	20.55	21.28	22.50	25.74	31.28	37.63	44.61	50.95	54.09
6/28/2010 0:00	60.57	66.28	67.85	69.85	64.37	59.38	50.34	45.77	45.20	39.96	28.42	24.67
6/29/2010 0:00	21.49	18.96	17.94	17.74	19.81	20.45	23.02	27.21	31.39	37.21	42.16	42.32
6/29/2010 0:00	47.64	50.46	50.83	50.38	49.80	42.93	40.46	36.72	36.44	30.20	23.10	21.36
6/30/2010 0:00	21.35	19.21	17.81	17.90	20.52	22.92	24.34	25.70	28.14	33.09	35.04	35.65
6/30/2010 0:00	39.09	41.81	42.83	44.01	45.27	42.27	35.77	30.45	30.80	26.48	22.84	20.49

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
7/1/2010 0:00	16.96	15.59	14.49	14.31	16.65	20.02	23.16	26.47	29.77	31.98	33.42	35.72
7/1/2010 0:00	38.19	42.20	42.76	43.47	42.14	42.53	35.86	31.31	33.47	29.95	25.61	20.47
7/2/2010 0:00	19.14	17.96	16.77	16.55	18.07	20.39	23.39	26.68	27.08	30.38	33.26	35.43
7/2/2010 0:00	40.57	46.11	46.91	47.08	46.90	43.85	36.34	30.98	31.93	29.25	25.07	22.03
7/3/2010 0:00	18.71	16.42	14.49	14.13	14.20	13.22	17.07	21.10	24.46	27.28	31.36	34.39
7/3/2010 0:00	39.77	43.88	50.73	56.70	56.71	54.08	45.96	39.80	40.06	36.47	27.04	22.53
7/4/2010 0:00	19.70	16.71	12.99	11.97	12.47	6.90	15.04	19.76	21.71	24.64	27.24	34.31
7/4/2010 0:00	40.22	44.13	50.43	53.75	56.17	56.38	51.07	42.04	43.09	37.23	26.56	23.42
7/5/2010 0:00	21.41	18.71	17.29	16.52	16.62	16.33	18.99	22.29	24.62	29.88	37.65	43.49
7/5/2010 0:00	46.76	49.23	53.95	57.47	59.63	55.87	49.37	42.15	43.07	35.81	25.64	22.82
7/6/2010 0:00	27.79	24.43	21.73	21.29	21.63	24.09	27.59	34.52	39.44	47.33	55.37	59.66
7/6/2010 0:00	64.95	72.79	74.91	82.90	81.60	74.25	64.10	56.87	54.76	47.42	33.45	28.92
7/7/2010 0:00	25.48	23.63	21.62	21.22	21.74	23.66	27.22	36.99	42.72	50.72	56.69	63.96
7/7/2010 0:00	70.13	80.84	84.89	89.22	86.61	77.18	68.01	55.09	54.51	48.32	34.78	30.53
7/8/2010 0:00	25.58	22.66	21.87	21.43	21.70	22.73	26.38	34.54	41.47	49.13	54.45	57.19
7/8/2010 0:00	63.05	69.60	71.84	76.31	70.99	65.29	58.63	50.64	50.90	39.35	30.32	26.53
7/9/2010 0:00	24.01	21.39	20.60	20.02	21.06	21.99	24.46	30.76	36.34	42.79	44.61	48.45
7/9/2010 0:00	53.10	56.05	58.64	61.34	56.71	52.30	44.97	38.16	39.93	34.56	26.71	23.71
7/10/2010 0:00	21.80	19.20	16.87	15.62	16.44	16.18	18.20	23.16	25.91	31.65	36.58	41.57
7/10/2010 0:00	46.02	48.91	52.48	58.09	56.93	52.34	47.09	39.58	40.81	35.20	27.97	23.30
7/11/2010 0:00	20.26	17.70	13.93	12.87	13.02	9.99	13.22	21.28	23.48	26.66	31.24	35.56
7/11/2010 0:00	40.64	43.36	49.14	48.78	52.33	48.61	45.29	38.56	42.95	36.42	27.11	23.71
7/12/2010 0:00	22.23	21.14	20.16	20.09	20.69	22.02	25.47	34.04	36.82	42.89	48.14	53.63
7/12/2010 0:00	61.62	66.34	68.01	69.11	63.41	58.93	49.10	43.42	45.78	37.23	27.63	24.49
7/13/2010 0:00	22.17	20.33	18.83	18.62	20.03	21.65	23.78	27.37	31.19	37.75	42.88	45.86
7/13/2010 0:00	52.76	57.03	58.69	62.18	58.70	53.06	44.56	40.49	43.42	36.10	28.09	24.88
7/14/2010 0:00	20.56	17.55	16.61	17.08	18.26	20.29	24.42	27.90	31.08	39.60	47.50	55.67
7/14/2010 0:00	59.92	69.54	71.91	79.25	76.56	69.25	59.68	55.23	57.52	43.40	31.00	27.49
7/15/2010 0:00	24.85	22.24	21.19	20.69	21.42	23.00	25.66	34.44	41.91	50.34	58.11	62.33
7/15/2010 0:00	71.05	80.27	84.06	89.00	84.18	77.04	66.81	60.43	60.04	50.78	37.10	31.90
7/16/2010 0:00	23.38	21.35	19.67	18.82	20.07	21.88	24.83	31.63	38.11	48.15	54.33	59.15
7/16/2010 0:00	64.99	78.27	79.64	81.54	78.96	68.86	59.56	53.20	53.73	40.53	29.48	26.90
7/17/2010 0:00	20.77	17.93	15.68	14.81	15.20	12.79	18.88	23.98	29.28	39.05	44.53	48.20
7/17/2010 0:00	53.32	61.60	64.98	70.51	68.46	62.44	55.03	45.66	48.70	39.66	27.42	23.70
7/18/2010 0:00	21.96	20.26	17.94	17.18	16.85	15.48	19.12	22.40	26.80	33.99	41.34	45.93
7/18/2010 0:00	51.41	57.03	63.28	68.87	68.60	64.38	57.38	47.47	51.92	43.04	29.68	23.77
7/19/2010 0:00	21.98	20.35	18.86	18.63	19.65	21.40	24.01	28.04	34.25	40.37	45.21	51.23
7/19/2010 0:00	57.43	60.88	63.22	71.78	68.32	59.39	53.86	46.65	46.45	38.52	27.53	23.74
7/20/2010 0:00	21.95	20.32	19.24	18.64	20.18	21.76	26.82	33.04	38.30	45.34	48.43	54.27
7/20/2010 0:00	60.10	66.87	70.11	75.18	74.71	65.39	57.60	51.42	54.61	43.03	32.54	26.14
7/21/2010 0:00	23.78	21.42	20.58	19.97	21.12	23.36	26.59	34.06	38.76	46.95	52.09	57.60
7/21/2010 0:00	63.97	69.74	75.29	78.83	81.49	66.09	58.94	52.32	54.85	42.20	31.40	27.81
7/22/2010 0:00	22.81	21.07	19.47	19.00	19.99	21.72	26.07	30.72	36.83	43.78	51.17	56.90
7/22/2010 0:00	61.64	64.68	72.41	80.10	72.84	64.87	60.56	54.15	57.58	46.18	31.92	27.25
7/23/2010 0:00	25.01	22.70	21.96	21.62	22.07	24.30	30.97	37.91	45.66	56.18	64.25	68.78
7/23/2010 0:00	76.37	82.04	91.15	96.18	87.61	76.81	71.57	63.66	66.06	53.93	36.28	31.46
7/24/2010 0:00	28.00	24.78	22.98	21.90	21.32	21.44	23.05	28.26	39.60	48.07	54.62	58.75
7/24/2010 0:00	65.09	68.54	73.52	85.84	76.50	67.92	60.50	52.58	52.29	42.98	31.99	27.73
7/25/2010 0:00	24.40	22.98	20.67	19.95	18.92	17.98	18.35	22.35	24.61	27.65	36.07	39.84
7/25/2010 0:00	41.89	46.19	49.84	50.98	51.42	48.28	47.40	39.93	44.05	36.28	25.55	23.01
7/26/2010 0:00	21.29	19.56	18.06	18.12	20.01	21.56	23.99	28.05	34.18	37.52	45.23	51.06
7/26/2010 0:00	59.83	62.30	70.72	79.17	73.89	62.70	54.62	48.29	48.43	37.36	27.59	23.70
7/27/2010 0:00	22.53	20.38	19.04	18.86	20.44	22.85	24.80	29.08	35.85	40.24	49.48	55.94
7/27/2010 0:00	63.27	69.16	76.33	88.35	77.34	68.96	62.59	54.22	57.39	44.49	30.43	27.60
7/28/2010 0:00	27.47	23.76	22.87	22.71	23.11	26.84	30.59	36.92	42.99	51.87	59.82	67.25
7/28/2010 0:00	73.35	77.66	86.17	94.30	85.38	75.84	66.64	59.65	62.52	50.52	36.59	30.67
7/29/2010 0:00	24.94	23.41	22.35	21.99	22.66	25.27	27.53	33.43	37.44	44.19	53.72	57.53
7/29/2010 0:00	63.40	67.41	75.08	79.00	71.39	63.89	56.84	49.15	48.31	37.08	29.21	25.94
7/30/2010 0:00	23.49	21.67	20.11	19.94	20.72	23.69	25.99	31.92	36.38	41.63	48.14	53.23
7/30/2010 0:00	58.84	62.15	67.45	70.93	65.82	59.79	52.77	46.21	45.99	40.45	29.25	24.39
7/31/2010 0:00	22.79	21.54	19.91	19.42	19.48	18.44	22.41	24.84	29.30	35.96	40.88	45.62
7/31/2010 0:00	47.74	53.86	56.17	65.83	62.06	55.03	48.16	43.02	46.63	37.12	27.77	24.02

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
8/1/2010 0:00	23.96	22.09	20.57	19.78	18.92	17.28	19.65	22.70	25.29	29.91	35.51	38.10
8/1/2010 0:00	45.50	49.35	51.06	59.19	61.02	55.34	48.06	42.41	45.12	36.76	28.14	24.60
8/2/2010 0:00	22.60	20.20	19.29	19.24	20.76	22.68	25.12	32.14	36.49	43.58	52.10	56.51
8/2/2010 0:00	63.63	68.17	74.57	87.44	79.06	70.84	63.90	59.29	62.47	47.68	33.53	28.44
8/3/2010 0:00	24.87	22.97	22.36	22.11	22.49	24.64	29.90	36.66	42.63	54.36	62.01	67.24
8/3/2010 0:00	74.59	79.54	90.38	97.82	91.06	78.80	72.49	65.85	68.01	53.18	38.77	31.76
8/4/2010 0:00	30.49	25.61	24.33	23.99	24.93	27.74	32.09	39.66	45.49	56.30	63.83	70.91
8/4/2010 0:00	77.04	82.00	95.09	99.31	87.13	77.12	70.87	65.34	67.59	51.01	40.13	35.70
8/5/2010 0:00	30.35	26.40	24.81	24.02	24.70	28.24	31.22	37.60	45.16	54.97	62.49	67.24
8/5/2010 0:00	73.67	77.31	87.38	88.18	81.07	73.13	64.92	60.33	60.47	45.76	35.20	28.89
8/6/2010 0:00	23.38	21.59	20.30	20.17	21.35	23.44	24.06	27.98	35.08	38.38	43.61	49.58
8/6/2010 0:00	56.61	59.13	63.39	64.64	58.23	49.96	42.87	39.61	39.14	33.04	27.76	23.80
8/7/2010 0:00	21.51	19.50	18.01	17.28	17.26	17.23	19.06	22.11	24.77	27.55	30.94	33.91
8/7/2010 0:00	35.98	40.41	44.16	49.13	48.55	46.03	39.59	35.70	34.48	28.90	23.22	21.32
8/8/2010 0:00	20.41	18.77	16.48	15.84	16.00	15.50	16.26	21.23	24.73	28.68	34.35	38.84
8/8/2010 0:00	46.41	52.45	54.61	61.46	69.27	63.56	53.05	53.68	60.20	44.68	31.44	27.09
8/9/2010 0:00	24.77	22.54	21.21	21.01	21.66	24.16	27.57	32.71	37.84	48.60	57.35	61.45
8/9/2010 0:00	68.75	75.71	82.26	91.06	86.85	75.40	68.04	63.06	64.60	48.70	33.00	28.20
8/10/2010 0:00	26.07	24.35	23.34	22.98	23.20	25.76	28.42	34.06	41.04	52.68	59.17	66.63
8/10/2010 0:00	74.78	80.49	89.55	92.69	86.33	77.70	67.64	64.08	66.65	51.22	39.52	32.17
8/11/2010 0:00	29.31	26.40	24.18	23.53	23.99	27.61	29.46	36.92	45.61	54.82	61.62	68.52
8/11/2010 0:00	78.22	85.13	90.36	93.37	86.22	79.13	69.83	66.48	67.76	51.03	41.27	32.54
8/12/2010 0:00	27.26	24.56	23.31	22.93	23.25	26.73	29.75	38.35	45.65	54.63	63.14	70.46
8/12/2010 0:00	79.87	86.19	91.96	104.47	90.02	81.64	72.94	71.49	70.52	53.49	39.39	33.84
8/13/2010 0:00	29.77	24.47	23.36	22.95	23.24	25.95	26.94	34.79	42.41	52.00	58.54	65.89
8/13/2010 0:00	73.70	78.06	82.78	92.54	81.71	73.56	65.74	62.45	60.44	48.12	34.75	30.49
8/14/2010 0:00	29.69	26.53	24.43	23.55	23.03	23.13	23.57	25.27	31.93	39.24	48.28	52.59
8/14/2010 0:00	55.31	60.54	65.68	73.61	69.60	61.10	53.37	50.32	50.21	36.24	28.74	27.59
8/15/2010 0:00	25.51	22.77	21.36	20.30	19.40	18.92	18.70	22.53	24.69	28.02	33.87	40.01
8/15/2010 0:00	43.67	47.54	52.87	54.62	54.65	50.53	43.48	44.98	45.47	32.27	27.26	24.09
8/16/2010 0:00	21.53	19.68	18.16	18.43	19.63	22.30	25.26	28.02	32.96	38.71	46.93	49.23
8/16/2010 0:00	54.24	59.03	62.81	64.93	61.44	55.50	48.26	45.75	45.39	31.67	25.19	23.36
8/17/2010 0:00	20.57	18.76	17.62	17.81	19.19	22.39	23.59	25.54	30.14	33.10	38.68	44.51
8/17/2010 0:00	52.04	53.53	55.80	58.28	56.07	50.58	41.94	41.47	40.08	29.20	24.99	22.18
8/18/2010 0:00	22.12	20.22	19.12	19.19	20.67	23.26	24.45	26.48	31.49	33.73	37.99	42.84
8/18/2010 0:00	50.55	53.88	55.77	59.19	57.11	52.31	44.77	45.25	44.78	32.32	27.19	23.51
8/19/2010 0:00	23.68	22.45	21.08	21.15	22.06	25.45	26.20	29.39	32.75	38.22	45.47	50.89
8/19/2010 0:00	56.06	61.87	67.63	71.94	68.05	59.89	51.43	50.82	49.30	35.90	29.46	25.26
8/20/2010 0:00	23.98	21.97	21.06	21.04	22.10	25.12	25.91	28.98	32.54	42.03	52.75	55.94
8/20/2010 0:00	63.47	68.64	76.11	80.98	65.34	60.47	50.99	52.91	50.29	36.25	28.39	26.79
8/21/2010 0:00	25.62	23.65	22.43	21.43	20.52	21.32	22.07	24.46	30.73	35.65	41.06	46.85
8/21/2010 0:00	45.78	49.02	49.28	55.23	55.92	50.06	43.59	42.97	41.52	32.08	28.05	25.82
8/22/2010 0:00	23.49	21.89	20.21	18.82	17.99	18.35	18.46	20.81	23.50	25.57	28.53	32.61
8/22/2010 0:00	33.51	37.40	40.69	45.98	45.67	43.18	37.31	40.03	39.46	29.27	25.17	22.45
8/23/2010 0:00	21.12	19.28	18.35	18.85	20.22	22.59	23.51	25.89	30.97	33.47	39.23	44.54
8/23/2010 0:00	48.55	50.68	55.78	59.23	57.40	49.41	45.13	46.17	44.17	31.45	26.38	23.45
8/24/2010 0:00	21.97	20.21	19.06	18.67	20.04	23.36	23.77	25.50	28.06	32.21	33.59	38.08
8/24/2010 0:00	41.71	44.71	46.97	50.49	49.26	42.00	38.04	41.56	39.69	30.66	25.61	22.56
8/25/2010 0:00	20.50	19.42	18.58	18.30	19.76	22.61	23.60	25.50	28.39	31.29	35.81	38.25
8/25/2010 0:00	41.72	42.50	46.06	45.93	42.65	41.14	33.52	37.83	34.24	27.52	23.86	21.13
8/26/2010 0:00	18.40	16.31	14.59	15.06	17.21	22.95	23.10	23.41	25.21	26.60	27.04	28.52
8/26/2010 0:00	31.25	31.45	31.96	32.39	31.75	30.35	27.03	29.60	27.33	23.80	21.09	18.62
8/27/2010 0:00	16.49	12.37	10.46	11.00	15.26	21.62	22.07	22.91	25.03	26.82	28.32	29.65
8/27/2010 0:00	32.73	34.98	36.41	38.61	35.04	32.40	28.72	30.16	28.02	23.84	21.89	19.26
8/28/2010 0:00	16.60	12.18	10.41	9.44	12.00	14.53	16.89	21.02	23.04	25.47	27.38	29.37
8/28/2010 0:00	33.38	36.15	37.35	42.73	44.90	40.86	33.90	35.02	35.28	28.49	22.61	20.51
8/29/2010 0:00	18.22	11.88	8.93	9.61	8.92	9.83	12.42	18.85	22.14	23.99	27.51	31.25
8/29/2010 0:00	34.37	39.54	41.95	46.85	51.15	47.74	38.63	38.20	37.92	29.54	23.78	21.35
8/30/2010 0:00	20.65	17.55	16.45	16.34	17.34	23.33	24.50	26.60	31.82	37.08	43.24	48.29
8/30/2010 0:00	52.73	57.17	62.81	69.68	64.23	54.86	47.65	50.21	46.45	35.91	27.08	23.50
8/31/2010 0:00	22.21	20.31	19.26	19.17	20.54	25.33	27.08	30.41	33.85	40.07	47.96	54.03
8/31/2010 0:00	57.32	61.35	69.02	78.01	72.88	60.54	53.45	54.74	50.61	37.04	28.52	25.49

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
9/1/2010 0:00	24.73	22.37	20.90	20.48	22.40	27.71	28.38	30.57	37.19	40.42	43.77	48.27
9/1/2010 0:00	56.42	60.11	68.70	76.26	65.08	55.86	50.94	52.42	43.98	34.84	29.59	26.24
9/2/2010 0:00	22.11	20.71	19.43	19.35	21.36	27.36	27.50	29.01	32.93	35.07	40.70	41.78
9/2/2010 0:00	46.61	50.85	56.64	56.99	50.00	42.93	39.87	41.22	37.37	29.95	25.32	23.47
9/3/2010 0:00	17.33	15.08	13.92	14.32	17.34	22.38	25.14	26.41	29.54	33.36	35.03	35.54
9/3/2010 0:00	34.32	35.15	35.86	34.50	33.36	27.75	27.38	31.42	26.05	23.55	19.72	17.97
9/4/2010 0:00	17.81	14.57	11.96	11.26	13.50	16.21	19.22	22.09	23.70	25.72	26.98	27.21
9/4/2010 0:00	26.92	26.98	26.82	26.89	27.88	27.08	26.07	29.73	28.35	23.77	19.52	15.73
9/5/2010 0:00	8.10	6.57	4.07	3.24	5.39	7.72	9.07	16.00	20.47	21.92	22.72	23.84
9/5/2010 0:00	24.20	25.34	25.60	26.39	28.17	27.22	28.01	28.60	27.54	22.82	17.31	14.93
9/6/2010 0:00	3.65	2.24	-0.76	-0.44	-0.28	0.91	5.93	15.16	20.07	22.27	25.02	28.43
9/6/2010 0:00	31.12	34.61	34.91	36.70	36.98	34.97	34.29	36.00	33.80	24.08	17.59	15.57
9/7/2010 0:00	10.11	9.44	7.99	8.64	14.07	21.64	22.59	25.61	28.60	32.10	34.18	36.42
9/7/2010 0:00	41.24	44.80	52.56	54.90	50.79	43.11	38.82	42.77	36.18	27.03	23.06	19.83
9/8/2010 0:00	12.72	10.60	8.42	9.43	14.47	23.56	23.42	24.92	25.57	27.66	29.12	30.42
9/8/2010 0:00	31.26	31.33	34.05	33.19	32.08	29.41	27.42	33.79	27.16	23.15	19.68	15.73
9/9/2010 0:00	3.51	1.23	0.15	0.83	10.36	20.99	23.26	24.65	26.94	29.01	30.61	31.53
9/9/2010 0:00	33.13	32.70	35.01	34.72	32.50	28.71	27.40	34.17	28.50	23.07	16.41	13.43
9/10/2010 0:00	11.75	9.53	7.74	8.88	13.67	20.88	22.44	23.72	25.64	27.57	28.19	31.00
9/10/2010 0:00	32.44	32.19	33.46	33.00	30.62	27.45	25.89	30.00	25.69	22.54	18.93	16.48
9/11/2010 0:00	10.37	8.49	5.52	7.69	9.48	12.82	15.49	20.05	24.27	26.08	26.82	25.93
9/11/2010 0:00	25.29	26.83	25.78	26.00	25.99	25.23	24.64	31.83	25.39	22.84	17.90	11.99
9/12/2010 0:00	12.68	9.60	6.88	6.33	6.42	8.32	12.44	17.53	21.30	22.05	23.10	23.49
9/12/2010 0:00	23.85	24.27	24.71	26.02	26.22	25.81	26.35	39.19	27.24	22.90	17.39	15.58
9/13/2010 0:00	15.17	13.52	10.50	12.86	17.55	24.23	23.71	26.66	28.82	30.10	33.67	36.07
9/13/2010 0:00	39.03	39.52	43.48	41.62	39.64	33.12	33.18	40.70	30.80	26.01	21.38	19.34
9/14/2010 0:00	17.71	16.00	14.83	15.92	18.52	26.60	25.68	26.71	29.99	31.46	34.41	37.50
9/14/2010 0:00	38.05	38.72	41.83	42.27	38.05	31.11	31.01	39.22	30.94	25.28	21.60	19.24
9/15/2010 0:00	16.57	15.40	13.00	14.26	16.96	25.77	23.59	23.93	25.91	28.81	30.59	31.50
9/15/2010 0:00	35.44	36.73	40.01	40.61	36.22	32.78	32.77	40.09	29.88	24.51	20.45	18.44
9/16/2010 0:00	14.12	11.95	10.54	12.10	14.95	26.96	26.18	25.88	29.28	32.35	36.27	38.96
9/16/2010 0:00	39.01	40.31	40.86	40.93	36.03	30.85	31.06	37.89	30.14	24.58	19.27	17.66
9/17/2010 0:00	16.45	14.61	12.28	14.47	16.76	28.40	28.45	26.39	29.80	32.40	34.97	38.71
9/17/2010 0:00	39.69	40.60	40.99	40.68	36.17	31.00	31.51	38.57	30.65	25.36	21.94	19.05
9/18/2010 0:00	15.16	12.25	10.27	10.72	12.14	16.43	19.67	21.71	24.93	27.26	29.41	28.70
9/18/2010 0:00	30.70	34.71	36.67	37.74	37.80	35.28	35.58	41.58	31.74	26.47	20.84	18.10
9/19/2010 0:00	16.12	13.51	11.76	11.99	12.60	16.83	18.78	20.17	22.56	23.78	25.25	27.12
9/19/2010 0:00	29.88	31.07	32.72	34.71	35.76	34.54	36.37	53.23	34.60	26.55	20.67	18.73
9/20/2010 0:00	16.84	15.93	13.64	15.61	17.44	28.41	29.61	26.81	29.36	34.38	37.66	39.53
9/20/2010 0:00	40.87	40.61	42.96	46.02	40.86	36.47	37.56	40.91	29.97	25.38	21.74	19.21
9/21/2010 0:00	17.47	16.05	14.97	15.91	17.93	29.60	29.60	28.99	30.22	35.83	40.45	44.11
9/21/2010 0:00	48.78	53.85	62.83	66.33	60.42	50.56	50.63	56.20	43.38	32.54	25.10	22.46
9/22/2010 0:00	19.91	18.90	18.32	18.53	19.65	30.95	29.72	30.22	32.45	37.24	39.07	44.74
9/22/2010 0:00	49.06	51.96	53.10	56.32	49.70	42.87	42.31	46.03	35.69	28.92	23.44	21.36
9/23/2010 0:00	19.94	18.45	17.47	17.64	19.46	29.14	28.65	29.77	32.59	34.96	38.80	43.22
9/23/2010 0:00	51.01	55.86	60.79	67.36	62.35	50.73	50.22	50.94	39.56	30.36	25.50	21.03
9/24/2010 0:00	19.47	16.90	15.84	16.26	18.81	28.64	28.62	28.47	30.94	34.17	38.57	41.08
9/24/2010 0:00	46.68	48.09	46.62	44.46	38.53	31.60	32.34	33.56	30.31	25.48	22.79	20.52
9/25/2010 0:00	18.91	18.06	16.66	16.25	17.21	19.02	21.16	23.15	26.40	28.55	30.06	30.07
9/25/2010 0:00	28.26	28.17	28.05	28.58	28.21	28.06	33.27	34.73	27.09	24.16	20.01	17.47
9/26/2010 0:00	15.09	13.51	11.28	11.79	12.72	15.40	16.55	19.89	23.60	24.64	24.70	24.78
9/26/2010 0:00	24.61	24.47	24.15	24.64	25.33	26.11	33.00	40.82	28.24	23.93	19.26	18.56
9/27/2010 0:00	16.66	16.15	14.37	15.02	18.02	27.26	33.06	30.62	30.23	33.22	35.68	33.70
9/27/2010 0:00	34.11	33.57	34.16	32.81	31.40	29.67	37.87	37.96	28.21	24.49	21.43	18.83
9/28/2010 0:00	14.89	14.20	12.89	14.70	17.31	28.50	32.63	28.92	29.77	31.69	34.47	36.93
9/28/2010 0:00	36.84	35.91	33.68	32.74	31.04	29.61	38.84	36.79	31.37	25.54	20.91	19.37
9/29/2010 0:00	16.22	15.22	13.17	14.21	17.51	27.54	31.25	28.74	30.08	32.09	32.44	33.44
9/29/2010 0:00	33.97	33.76	33.85	34.63	32.62	30.31	37.61	37.27	30.48	24.74	21.52	19.15
9/30/2010 0:00	14.24	9.41	9.10	11.05	15.46	25.74	31.25	27.95	30.32	34.39	36.58	36.41
9/30/2010 0:00	37.01	36.32	34.34	33.53	30.71	29.80	39.78	39.52	31.51	25.79	21.03	19.24

Day Ahead System Lambda – Energy Only

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
10/1/2010 0:00	13.48	10.52	10.21	11.86	17.30	25.59	32.67	30.61	33.28	34.45	34.59	35.01
10/1/2010 0:00	33.50	33.59	32.58	30.99	29.17	28.24	37.78	34.88	26.26	23.14	18.95	17.44
10/2/2010 0:00	16.89	15.20	14.07	14.38	15.74	18.98	21.17	23.57	25.37	30.24	29.10	27.84
10/2/2010 0:00	26.13	25.05	24.80	24.87	25.32	24.97	34.38	30.33	25.95	23.67	19.74	17.62
10/3/2010 0:00	17.81	16.23	15.66	15.52	16.01	17.80	20.41	21.47	22.83	23.84	23.64	23.10
10/3/2010 0:00	22.76	22.55	22.18	22.49	22.98	24.28	38.27	34.42	26.41	23.41	19.91	18.03
10/4/2010 0:00	14.17	12.67	12.57	12.67	16.69	27.43	36.58	33.66	32.92	34.17	34.36	31.45
10/4/2010 0:00	30.71	30.57	28.72	28.13	26.79	28.21	38.58	34.71	29.64	24.56	20.88	16.99
10/5/2010 0:00	13.81	14.02	13.95	14.32	18.46	28.96	36.69	34.01	36.63	36.81	35.90	34.02
10/5/2010 0:00	34.66	34.70	32.16	30.98	28.70	29.15	39.37	36.13	31.44	25.15	21.00	17.62
10/6/2010 0:00	16.06	14.98	15.10	15.68	19.08	28.98	32.60	29.63	30.71	32.84	33.78	33.05
10/6/2010 0:00	32.98	33.18	27.94	27.98	27.93	27.34	37.30	34.57	27.60	24.04	21.70	19.77
10/7/2010 0:00	16.03	15.56	14.49	15.03	19.00	29.03	36.15	30.73	31.97	33.44	35.68	35.05
10/7/2010 0:00	35.23	36.52	33.36	31.82	30.41	31.27	41.41	38.12	30.62	25.78	22.15	18.69
10/8/2010 0:00	15.86	14.23	13.81	14.02	17.58	26.22	28.68	27.62	28.42	30.34	31.61	32.90
10/8/2010 0:00	32.78	35.25	34.09	32.70	32.09	29.11	35.66	34.75	29.31	23.85	20.78	18.90
10/9/2010 0:00	15.85	14.31	13.47	13.48	15.52	18.27	22.22	24.17	27.19	30.49	32.70	32.10
10/9/2010 0:00	32.64	32.78	32.66	32.65	33.10	34.00	41.67	37.61	30.04	26.06	21.26	18.66
10/10/2010 0:00	17.39	15.36	15.07	14.98	15.67	18.10	20.01	21.40	23.82	24.93	26.23	26.83
10/10/2010 0:00	27.87	28.27	29.95	30.48	32.01	32.97	45.69	44.57	33.06	26.16	22.22	20.37
10/11/2010 0:00	17.76	17.27	17.21	17.69	20.51	25.57	30.11	29.22	30.56	32.21	35.80	35.64
10/11/2010 0:00	37.19	37.89	39.08	35.83	35.91	35.54	38.53	35.85	30.64	27.55	23.85	20.96
10/12/2010 0:00	18.88	17.87	17.83	18.07	20.20	25.15	30.06	29.95	30.19	32.29	33.74	36.37
10/12/2010 0:00	37.26	37.75	37.57	35.56	33.83	32.32	35.73	35.80	30.05	24.77	21.96	19.37
10/13/2010 0:00	18.19	16.48	16.13	17.02	20.29	26.65	32.39	31.20	32.77	32.79	34.39	34.54
10/13/2010 0:00	33.93	34.75	33.98	32.37	30.12	30.17	41.00	37.04	31.94	27.17	24.15	21.21
10/14/2010 0:00	18.15	17.06	15.92	16.41	18.40	26.57	33.58	32.08	31.40	31.29	31.83	32.40
10/14/2010 0:00	31.85	31.68	29.69	28.38	27.03	27.69	34.19	32.00	27.75	24.60	22.28	19.64
10/15/2010 0:00	17.42	16.34	15.59	16.70	19.67	26.68	33.81	33.36	33.79	35.59	37.70	36.67
10/15/2010 0:00	34.91	33.88	30.54	29.58	28.90	28.76	34.72	31.41	29.62	26.47	21.61	18.28
10/16/2010 0:00	16.80	15.26	15.04	15.34	15.92	18.01	23.34	24.58	27.09	27.87	27.92	26.93
10/16/2010 0:00	26.34	25.69	24.82	24.46	25.26	27.28	34.75	30.22	27.00	24.46	21.26	20.20
10/17/2010 0:00	19.15	18.04	17.22	17.29	17.79	19.29	22.39	22.74	24.62	25.52	26.25	26.41
10/17/2010 0:00	26.17	25.88	25.66	26.65	27.52	30.35	44.28	38.47	32.13	26.92	22.38	20.42
10/18/2010 0:00	17.93	17.92	17.55	17.66	20.68	27.84	34.94	33.65	34.05	35.16	37.76	36.04
10/18/2010 0:00	35.13	34.01	31.31	30.47	30.74	32.26	41.89	35.85	30.60	26.33	23.30	21.46
10/19/2010 0:00	19.56	18.75	18.53	19.18	21.53	28.09	35.65	34.23	32.83	33.87	34.38	32.73
10/19/2010 0:00	32.30	31.64	29.54	28.88	28.41	29.31	38.00	33.63	30.27	26.60	22.77	19.76
10/20/2010 0:00	17.61	16.43	16.38	16.69	18.84	27.76	35.15	32.88	32.20	32.99	33.15	32.39
10/20/2010 0:00	31.22	30.19	29.15	28.26	27.88	29.91	41.02	34.48	28.92	25.17	22.94	20.70
10/21/2010 0:00	17.28	16.98	17.16	17.67	20.76	28.30	37.77	32.60	32.63	34.57	35.85	33.03
10/21/2010 0:00	32.46	32.12	30.87	30.07	30.08	32.78	45.22	38.31	31.95	27.20	23.56	21.38
10/22/2010 0:00	19.35	18.16	17.43	17.83	20.09	28.84	36.84	35.38	32.93	34.41	35.28	33.63
10/22/2010 0:00	31.76	30.80	29.65	28.67	27.95	29.60	34.33	30.11	27.81	25.81	22.38	19.64
10/23/2010 0:00	18.49	18.20	17.73	17.76	18.29	20.49	23.89	25.46	26.99	28.35	29.01	28.22
10/23/2010 0:00	26.89	25.99	25.50	25.79	26.31	28.54	40.45	32.77	27.83	24.84	21.49	19.17
10/24/2010 0:00	18.16	16.84	15.64	15.98	16.43	18.60	21.32	21.57	23.67	24.81	25.89	26.04
10/24/2010 0:00	25.91	25.75	25.81	26.02	26.85	30.99	44.67	39.11	31.48	25.42	21.70	19.48
10/25/2010 0:00	19.38	19.34	18.85	19.07	20.42	27.57	36.64	34.47	33.85	34.97	36.54	36.90
10/25/2010 0:00	37.36	36.45	34.82	35.36	34.50	36.38	42.78	37.76	32.33	27.01	22.31	20.27
10/26/2010 0:00	16.34	15.67	14.89	15.28	17.84	25.74	35.31	31.48	32.37	32.25	33.79	34.13
10/26/2010 0:00	35.70	33.20	30.83	30.81	30.13	33.54	43.36	35.11	28.43	24.70	20.65	18.19
10/27/2010 0:00	14.26	13.95	13.63	14.35	16.31	25.05	31.15	30.22	30.44	31.56	31.24	31.37
10/27/2010 0:00	31.35	30.44	29.00	28.92	28.52	31.46	37.19	33.52	27.80	24.38	20.99	17.98
10/28/2010 0:00	15.12	14.63	13.90	14.00	15.80	25.60	33.47	32.90	33.29	34.81	34.72	32.95
10/28/2010 0:00	33.86	32.31	30.87	30.29	30.83	36.46	51.48	42.19	36.39	29.24	23.53	21.92
10/29/2010 0:00	19.80	20.06	19.77	19.87	21.29	29.99	41.11	39.05	36.88	36.74	34.50	32.59
10/29/2010 0:00	31.21	29.20	26.98	25.73	25.37	29.55	37.51	32.72	28.78	25.92	22.23	20.20
10/30/2010 0:00	21.04	20.77	20.81	20.70	20.45	22.44	26.19	28.33	32.37	32.14	32.31	29.93
10/30/2010 0:00	26.88	25.63	25.07	25.10	25.50	30.13	36.81	32.20	29.02	25.53	22.12	20.74
10/31/2010 0:00	19.91	19.31	18.88	18.85	19.46	20.21	23.01	24.69	26.46	26.75	26.41	25.63
10/31/2010 0:00	25.41	24.90	24.38	24.82	25.62	31.11	44.17	35.73	31.46	25.95	22.02	20.10

Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
11/1/2010 0:00	19.98	19.94	20.19	20.54	22.13	29.66	43.01	40.41	38.38	38.69	38.39	36.96
11/1/2010 0:00	33.76	31.97	30.91	29.51	29.84	35.14	49.07	43.91	36.60	29.99	26.36	22.73
11/2/2010 0:00	21.07	20.29	19.68	19.91	21.50	30.94	44.54	38.65	37.56	39.17	37.81	35.96
11/2/2010 0:00	35.70	33.81	30.57	29.81	28.91	35.71	43.47	37.01	32.89	26.83	22.50	20.17
11/3/2010 0:00	19.31	19.16	18.92	19.19	20.24	30.23	41.49	35.59	35.51	35.88	35.77	33.48
11/3/2010 0:00	32.20	30.32	27.74	26.90	26.27	33.21	37.13	34.29	29.87	25.22	22.58	19.11
11/4/2010 0:00	17.96	17.72	17.47	17.78	18.40	29.32	39.78	37.14	37.44	40.20	38.74	35.03
11/4/2010 0:00	34.15	33.01	29.47	28.08	28.42	37.72	45.69	38.46	33.35	27.69	24.76	22.42
11/5/2010 0:00	21.52	21.25	21.32	22.09	23.01	32.16	49.30	44.86	43.58	43.64	43.21	39.20
11/5/2010 0:00	39.00	37.73	34.14	32.75	33.07	45.08	51.02	46.82	37.51	31.96	27.65	24.45
11/6/2010 0:00	24.42	24.16	24.38	23.65	23.94	26.09	31.64	34.74	36.36	38.65	37.99	33.98
11/6/2010 0:00	28.31	26.05	25.19	25.19	25.88	38.23	37.98	34.63	31.28	26.95	24.77	24.21
11/7/2010 0:00	24.04	24.06	22.40	20.40	20.71	21.77	25.24	25.54	26.28	27.16	26.97	26.51
11/7/2010 0:00	25.69	24.98	24.28	24.26	24.78	37.25	44.06	38.09	32.02	25.62	23.21	21.46
11/8/2010 0:00	18.37	18.77	18.54	18.02	18.91	25.64	35.76	35.39	36.28	36.55	36.09	35.26
11/8/2010 0:00	32.95	31.51	28.87	27.54	29.10	37.98	40.85	35.03	31.92	26.66	22.73	19.14
11/9/2010 0:00	17.26	17.30	16.31	16.67	17.15	22.39	32.87	36.63	35.37	35.90	34.76	32.41
11/9/2010 0:00	31.13	29.22	28.05	27.53	27.44	38.37	41.02	36.94	32.44	26.64	20.81	17.16
11/10/2010 0:00	15.44	14.38	14.01	14.06	14.53	19.18	32.86	37.24	34.59	34.42	34.33	34.02
11/10/2010 0:00	32.24	30.74	28.23	26.15	26.00	36.34	41.43	36.90	29.72	25.37	21.55	17.15
11/11/2010 0:00	16.02	15.38	15.16	15.17	15.73	20.34	38.13	36.82	34.07	33.98	36.35	33.81
11/11/2010 0:00	32.60	32.08	29.00	27.33	27.25	42.62	50.12	38.59	33.43	29.59	23.74	20.76
11/12/2010 0:00	18.10	17.19	16.38	16.18	16.26	19.13	34.06	35.21	33.70	34.74	35.94	34.84
11/12/2010 0:00	35.39	34.64	32.23	28.47	27.55	39.41	42.68	34.76	30.70	26.35	22.69	20.01
11/13/2010 0:00	16.75	16.62	15.12	14.32	14.44	16.22	21.57	23.74	25.25	27.08	27.76	27.08
11/13/2010 0:00	25.11	23.96	23.14	23.03	23.78	37.02	35.47	30.59	27.20	23.67	20.65	18.53
11/14/2010 0:00	17.32	16.01	14.47	14.37	15.51	16.48	20.24	21.83	23.45	24.61	25.21	24.73
11/14/2010 0:00	24.42	24.16	23.45	23.62	25.26	39.59	41.13	39.62	33.05	27.27	23.93	22.15
11/15/2010 0:00	20.42	19.69	19.54	19.66	19.56	22.79	37.45	37.27	36.29	37.37	38.86	37.32
11/15/2010 0:00	33.65	30.91	28.75	27.27	27.56	43.85	42.67	37.57	36.10	31.63	27.14	22.61
11/16/2010 0:00	20.45	19.87	19.61	19.42	19.36	20.69	37.05	36.43	35.63	36.56	37.84	36.66
11/16/2010 0:00	33.03	32.17	30.72	29.32	29.12	43.56	40.64	37.34	35.13	31.51	26.33	22.97
11/17/2010 0:00	20.98	20.70	20.20	20.03	19.86	20.95	32.51	35.48	32.05	33.60	33.82	33.22
11/17/2010 0:00	32.32	29.69	28.74	27.60	28.13	41.00	40.46	37.63	33.54	30.04	24.80	22.05
11/18/2010 0:00	23.10	22.14	22.02	21.64	21.73	23.14	36.73	40.37	39.28	38.69	39.87	36.01
11/18/2010 0:00	31.77	29.86	29.41	28.01	28.53	43.01	42.02	39.42	33.79	30.29	24.91	22.99
11/19/2010 0:00	20.24	18.58	17.51	17.36	17.64	21.55	35.29	36.25	35.48	34.81	33.94	32.81
11/19/2010 0:00	31.67	29.67	27.95	27.32	27.32	42.71	43.58	36.62	30.97	27.90	23.85	22.07
11/20/2010 0:00	20.77	20.22	19.91	19.36	19.49	19.79	23.16	25.29	27.44	30.30	29.99	29.08
11/20/2010 0:00	25.43	24.83	23.34	22.70	23.76	38.94	36.97	32.19	28.84	25.49	21.86	22.16
11/21/2010 0:00	21.41	20.68	18.60	18.81	18.54	19.10	19.95	20.93	22.68	23.80	23.93	23.96
11/21/2010 0:00	23.38	22.95	22.32	22.27	24.01	42.90	41.17	38.11	32.58	25.68	22.10	20.88
11/22/2010 0:00	20.43	20.03	19.90	19.78	19.09	21.83	31.46	35.51	33.55	35.51	37.81	37.81
11/22/2010 0:00	36.99	34.68	32.55	30.12	31.03	55.57	55.68	47.22	39.37	31.54	25.97	24.09
11/23/2010 0:00	20.41	19.74	19.46	19.38	19.58	20.75	29.90	35.25	34.16	36.50	37.19	37.26
11/23/2010 0:00	34.27	32.30	30.46	28.23	29.23	50.54	47.96	43.89	38.96	31.84	27.10	23.83
11/24/2010 0:00	22.49	20.74	20.04	18.58	18.39	22.19	31.28	33.79	34.54	33.00	32.19	31.57
11/24/2010 0:00	31.01	29.73	28.71	27.21	28.30	47.13	40.09	38.16	33.43	27.72	23.13	21.39
11/25/2010 0:00	19.48	18.28	17.53	17.27	17.01	17.86	20.09	22.19	24.38	26.42	27.16	26.72
11/25/2010 0:00	23.81	22.12	21.47	20.84	21.13	24.73	24.82	24.57	24.08	22.83	21.13	19.69
11/26/2010 0:00	17.66	15.52	14.92	14.97	14.92	18.21	22.28	25.60	25.54	27.32	27.17	26.89
11/26/2010 0:00	25.82	25.14	24.57	24.60	27.10	44.39	43.86	39.04	36.50	32.16	26.82	22.94
11/27/2010 0:00	21.18	20.63	20.30	20.19	20.53	21.19	23.90	25.49	28.28	30.49	30.98	29.96
11/27/2010 0:00	27.15	25.32	24.40	24.25	24.99	43.69	35.54	35.19	31.98	27.23	23.89	21.53
11/28/2010 0:00	19.89	18.83	16.88	15.95	15.88	16.57	18.41	20.79	22.09	22.86	22.79	22.63
11/28/2010 0:00	22.03	21.43	20.75	20.63	22.18	36.05	33.03	30.45	27.92	24.60	22.52	20.50
11/29/2010 0:00	16.34	15.80	15.14	14.90	15.43	17.64	27.64	36.78	34.82	34.62	36.53	33.50
11/29/2010 0:00	30.05	28.07	27.68	27.30	27.94	46.64	43.98	39.35	36.30	28.36	24.94	21.32
11/30/2010 0:00	15.44	14.10	13.58	13.30	12.95	15.23	25.22	31.21	27.68	28.20	28.03	28.31
11/30/2010 0:00	27.22	26.93	26.43	25.94	26.87	40.99	42.84	40.20	33.42	28.36	25.33	21.70

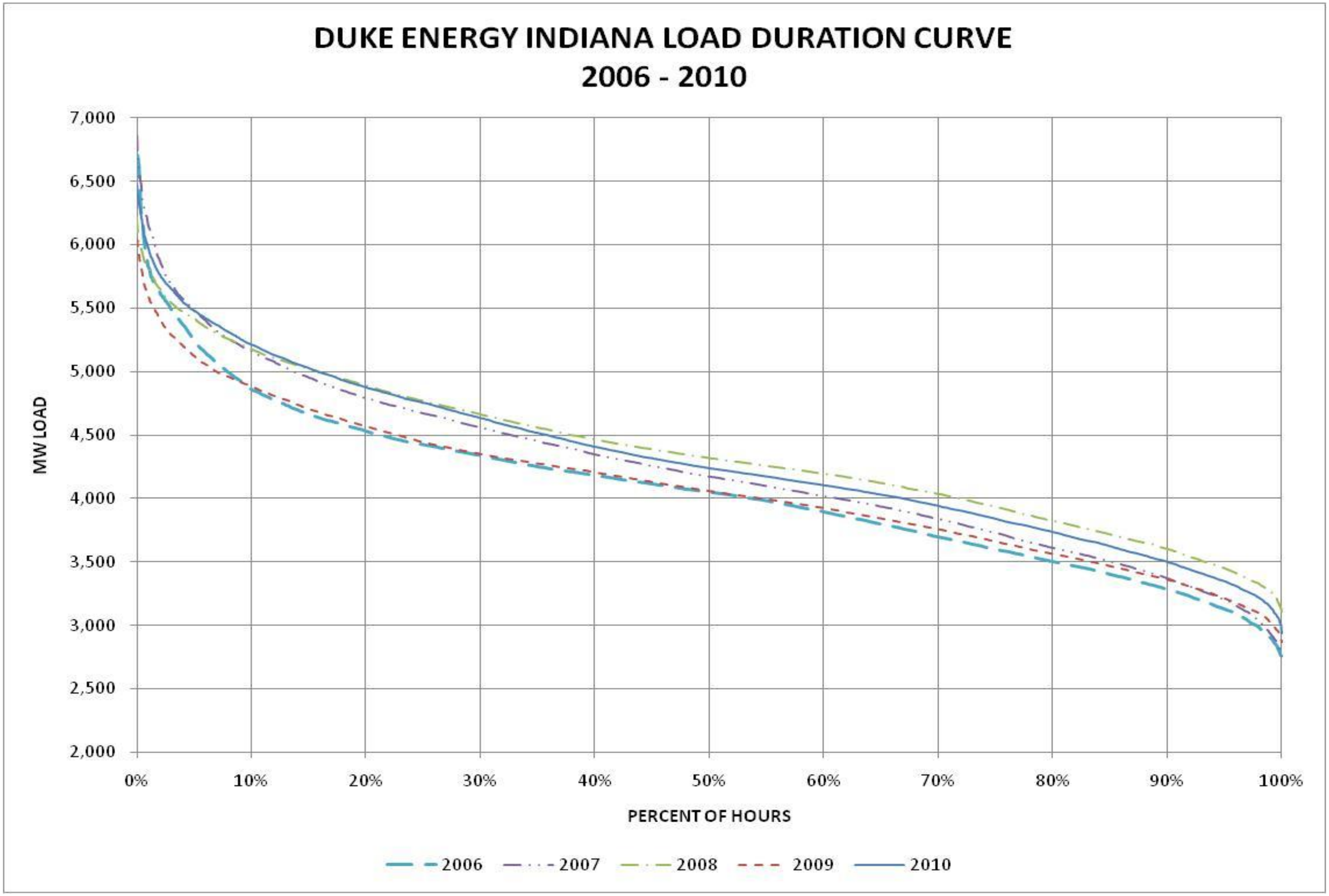
Hour -->	1 & 13	2 & 14	3 & 15	4 & 16	5 & 17	6 & 18	7 & 19	8 & 20	9 & 21	10 & 22	11 & 23	12 & 24
12/1/2010 0:00	19.92	19.55	19.06	18.90	19.01	21.82	31.26	37.08	35.90	35.59	36.61	34.60
12/1/2010 0:00	31.13	30.20	29.04	28.32	31.56	51.84	48.37	44.11	40.89	35.02	27.86	24.75
12/2/2010 0:00	24.57	23.61	23.13	22.88	23.04	24.45	37.70	47.50	45.88	42.26	42.45	40.86
12/2/2010 0:00	35.81	34.04	30.81	29.42	30.85	55.56	51.45	45.38	42.43	41.16	29.68	24.27
12/3/2010 0:00	25.62	24.81	24.17	23.94	23.63	24.92	39.46	48.50	46.09	43.35	43.27	39.57
12/3/2010 0:00	33.28	32.06	28.35	27.12	28.02	50.40	48.39	43.62	40.73	36.55	29.08	25.39
12/4/2010 0:00	25.33	24.08	23.36	22.47	22.11	22.63	24.78	26.26	28.45	33.22	37.46	34.47
12/4/2010 0:00	28.66	26.20	25.61	25.51	26.33	48.21	48.07	44.11	41.62	36.26	30.65	27.51
12/5/2010 0:00	24.17	23.81	23.03	22.25	21.17	21.40	22.57	24.23	25.53	27.42	27.69	27.75
12/5/2010 0:00	26.90	26.46	25.86	25.77	27.30	50.68	49.89	47.92	43.07	39.34	27.14	23.96
12/6/2010 0:00	24.34	24.21	23.64	23.45	23.61	24.94	36.68	47.24	46.55	43.76	45.71	43.41
12/6/2010 0:00	40.20	37.95	32.96	30.20	33.75	60.06	55.65	54.39	50.23	44.67	33.36	30.45
12/7/2010 0:00	27.21	26.38	25.40	25.20	24.96	27.45	43.47	48.33	47.30	46.94	46.82	42.38
12/7/2010 0:00	39.59	36.93	33.76	30.91	34.56	58.25	54.11	48.94	46.79	45.31	36.72	32.83
12/8/2010 0:00	26.62	25.69	24.84	24.76	24.83	26.84	41.27	54.48	47.52	48.61	51.62	45.75
12/8/2010 0:00	41.38	40.18	35.54	34.62	37.61	62.78	61.14	58.51	49.23	46.62	34.36	26.68
12/9/2010 0:00	28.73	28.14	27.41	26.80	26.77	29.77	42.75	51.78	45.36	44.18	43.52	40.03
12/9/2010 0:00	34.53	32.80	29.30	28.01	30.93	55.92	52.54	45.73	43.50	38.91	30.33	26.82
12/10/2010 0:00	26.72	24.32	23.26	22.95	23.33	25.07	34.97	44.07	44.24	44.48	46.78	41.54
12/10/2010 0:00	36.80	33.93	31.47	29.19	30.82	50.67	49.61	47.13	43.79	39.01	29.37	24.70
12/11/2010 0:00	23.40	22.46	21.56	20.53	20.24	21.26	23.01	23.33	24.66	26.23	27.11	25.28
12/11/2010 0:00	24.47	23.22	22.81	22.94	24.45	44.35	42.09	38.10	35.36	31.07	25.55	23.58
12/12/2010 0:00	23.09	22.37	21.58	20.42	20.46	20.95	21.86	22.56	23.45	25.28	26.10	25.71
12/12/2010 0:00	25.57	25.48	24.63	24.84	28.51	53.09	59.12	52.97	47.75	44.69	33.53	28.98
12/13/2010 0:00	26.68	26.34	26.23	25.42	25.39	28.42	41.77	59.41	58.07	56.38	55.63	52.52
12/13/2010 0:00	47.14	43.69	40.87	40.14	42.95	66.41	77.37	68.65	63.20	56.81	42.00	33.91
12/14/2010 0:00	36.15	33.62	32.48	31.75	32.49	38.05	45.49	67.47	72.34	64.71	61.98	59.19
12/14/2010 0:00	50.04	45.90	43.04	40.80	43.36	72.82	77.81	66.04	63.44	59.75	43.73	35.10
12/15/2010 0:00	34.39	29.91	28.82	28.36	30.14	36.03	52.98	75.13	73.86	67.80	63.43	57.90
12/15/2010 0:00	48.41	44.83	40.56	39.14	43.60	70.46	75.49	69.69	63.86	58.17	44.27	36.74
12/16/2010 0:00	31.04	28.62	28.28	27.25	27.75	29.88	44.66	63.21	60.86	60.77	58.63	55.95
12/16/2010 0:00	45.60	38.92	34.25	32.41	37.80	66.94	71.76	60.85	58.49	51.42	38.86	30.85
12/17/2010 0:00	28.70	26.43	25.42	24.92	25.26	28.42	39.92	45.74	45.83	43.98	43.44	41.27
12/17/2010 0:00	36.44	32.88	30.07	28.20	31.16	52.55	56.35	47.30	47.11	40.43	34.31	30.57
12/18/2010 0:00	31.00	30.07	28.44	26.36	26.35	26.17	29.12	30.39	37.27	41.58	42.86	35.44
12/18/2010 0:00	32.67	29.92	27.80	28.19	29.54	51.20	57.97	49.34	44.03	41.53	32.58	27.73
12/19/2010 0:00	27.47	25.33	24.72	24.54	24.55	24.94	27.65	29.17	32.63	34.52	35.07	33.65
12/19/2010 0:00	34.24	32.29	30.02	30.16	32.37	53.12	62.96	54.32	48.56	44.17	34.73	28.26
12/20/2010 0:00	27.44	25.60	25.33	24.96	25.18	27.50	39.88	46.62	47.74	46.71	43.14	38.70
12/20/2010 0:00	34.19	31.81	29.49	29.09	31.90	52.92	56.84	49.22	43.98	37.31	30.11	26.20
12/21/2010 0:00	24.97	23.28	22.63	22.34	22.63	23.24	29.15	39.77	43.15	43.59	42.76	39.29
12/21/2010 0:00	34.93	32.05	29.01	28.61	30.90	53.40	55.59	45.67	42.55	40.74	33.94	28.80
12/22/2010 0:00	25.49	24.57	23.90	23.60	23.81	24.27	29.30	39.38	41.44	41.67	41.44	41.02
12/22/2010 0:00	36.63	35.44	33.96	31.12	32.70	52.76	53.89	47.80	41.70	39.54	33.99	28.02
12/23/2010 0:00	25.93	24.69	24.25	23.82	24.04	25.08	28.62	39.67	40.94	42.47	42.35	39.88
12/23/2010 0:00	33.95	31.81	29.27	27.89	28.39	46.46	48.41	43.01	39.56	37.30	30.98	26.34
12/24/2010 0:00	23.23	22.65	21.74	21.17	21.11	21.49	22.87	24.51	25.97	28.75	29.34	28.67
12/24/2010 0:00	25.44	24.79	24.20	23.83	24.02	30.59	28.47	26.24	25.81	24.89	23.82	22.92
12/25/2010 0:00	20.91	20.79	19.61	19.33	18.92	18.96	19.71	21.36	22.68	24.31	23.87	23.89
12/25/2010 0:00	23.23	22.38	21.74	21.80	22.14	26.55	26.77	26.16	25.83	25.32	24.15	22.58
12/26/2010 0:00	21.59	21.38	20.26	19.93	19.66	19.47	20.07	22.70	23.88	25.03	25.85	26.00
12/26/2010 0:00	25.62	25.17	24.37	24.40	25.96	43.61	49.73	44.92	40.35	36.69	28.10	24.82
12/27/2010 0:00	23.63	23.17	22.62	22.41	22.39	23.82	27.49	37.32	38.25	37.22	37.42	38.17
12/27/2010 0:00	34.33	31.65	29.88	27.50	29.27	42.58	51.73	42.98	39.29	38.17	29.43	25.35
12/28/2010 0:00	24.51	23.50	22.75	22.32	22.62	24.45	27.70	35.74	39.14	40.06	40.76	40.35
12/28/2010 0:00	36.23	32.99	28.31	27.01	28.42	45.57	56.96	45.38	38.61	38.33	28.85	24.57
12/29/2010 0:00	23.52	22.42	22.18	21.82	21.62	22.68	25.55	33.64	34.29	35.15	34.84	34.17
12/29/2010 0:00	32.05	29.10	26.50	25.33	25.98	39.96	48.22	38.19	33.91	31.99	25.80	22.86
12/30/2010 0:00	17.77	16.58	15.91	15.45	15.68	17.83	22.39	25.39	25.50	27.53	27.31	27.11
12/30/2010 0:00	26.05	25.01	24.05	23.42	23.56	33.88	40.06	31.61	26.84	25.26	23.28	22.10
12/31/2010 0:00	17.70	16.18	14.93	13.85	13.95	15.69	20.09	22.50	22.51	23.77	24.08	24.53
12/31/2010 0:00	24.17	23.40	22.14	21.67	22.26	29.00	32.61	24.74	23.12	21.25	19.72	18.46

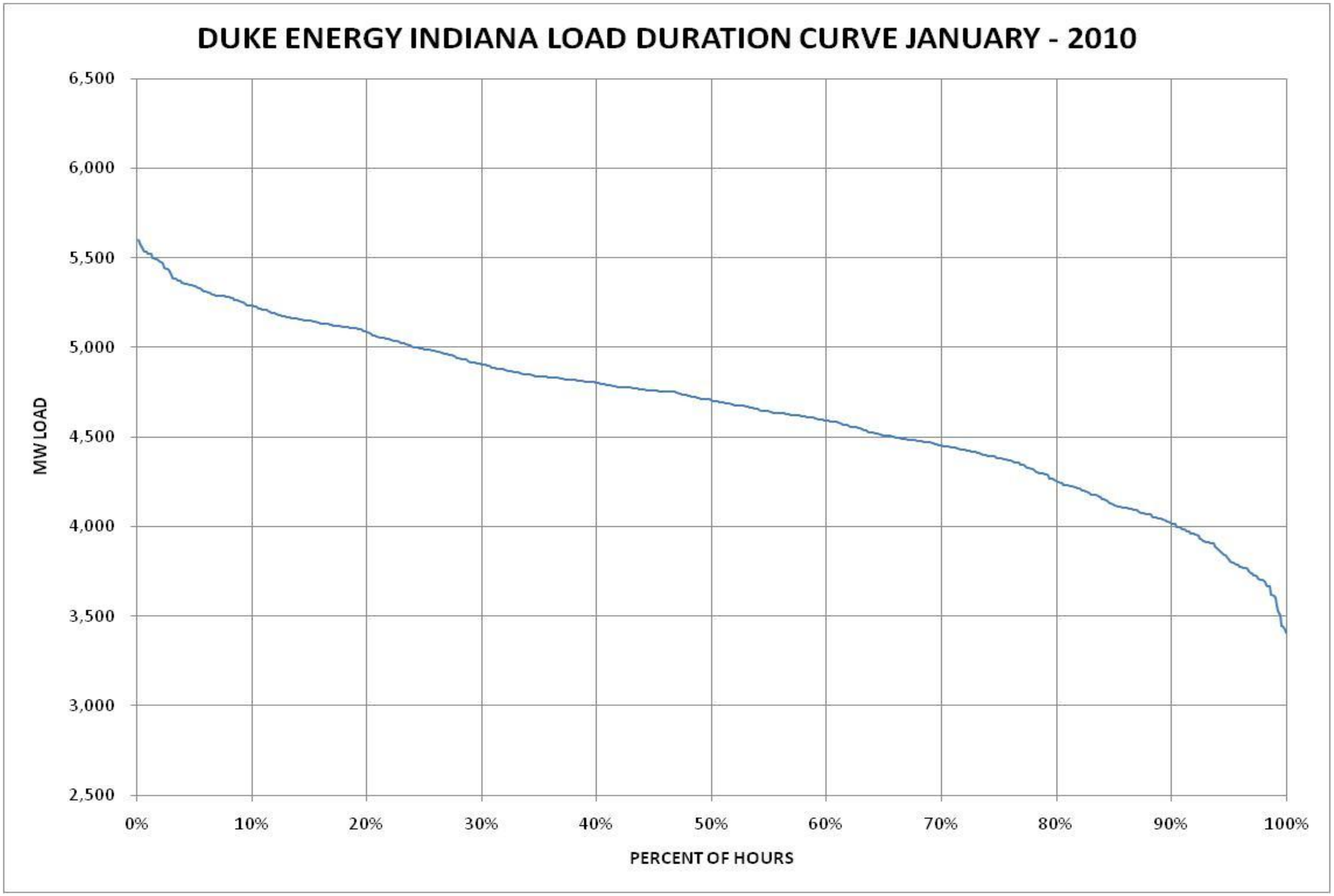
7. Load Shapes
(IURC Rule - Section 5(a)(1))

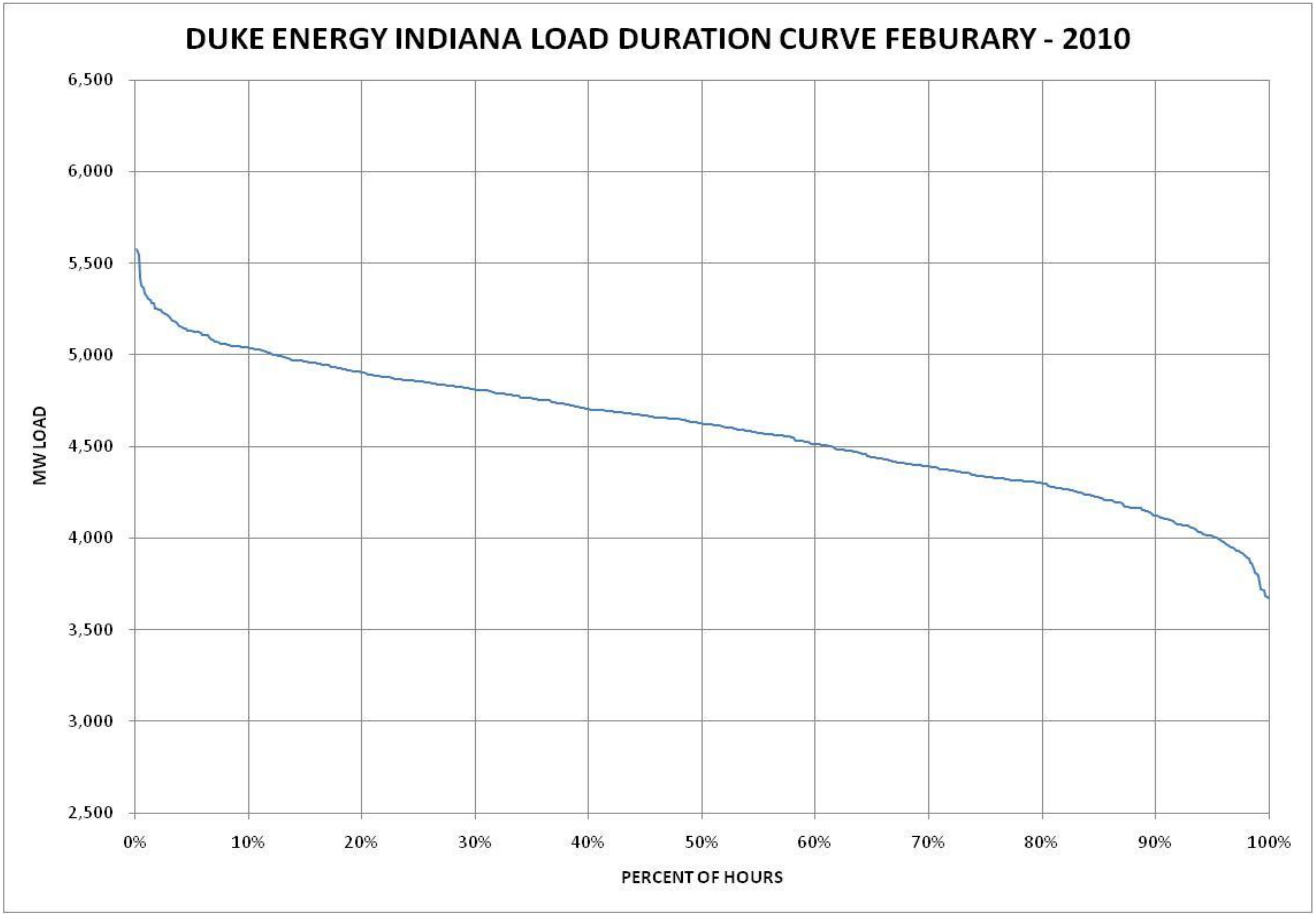
(A) Graphical representations of the annual load duration curves for the years 2006 through 2010 are attached.

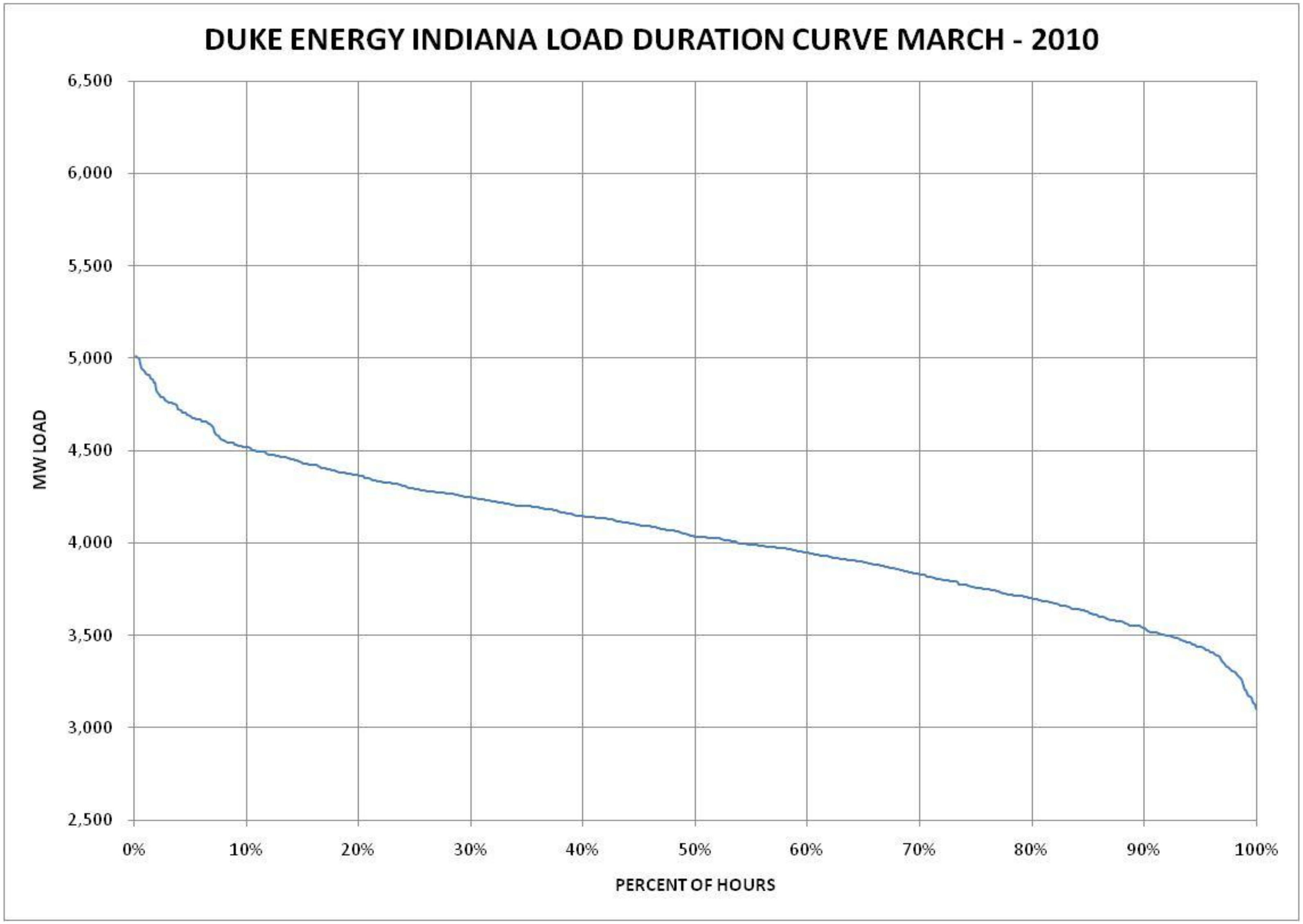
(B) and (D) Summer peak day load shapes for the years 2006 through 2010 and winter peak day load shapes for the years 2006 through 2010 are attached. Typical summer and winter weekday and weekend shapes are also attached. For the forecast period, no significant trends or changes from the historic load shapes are expected.

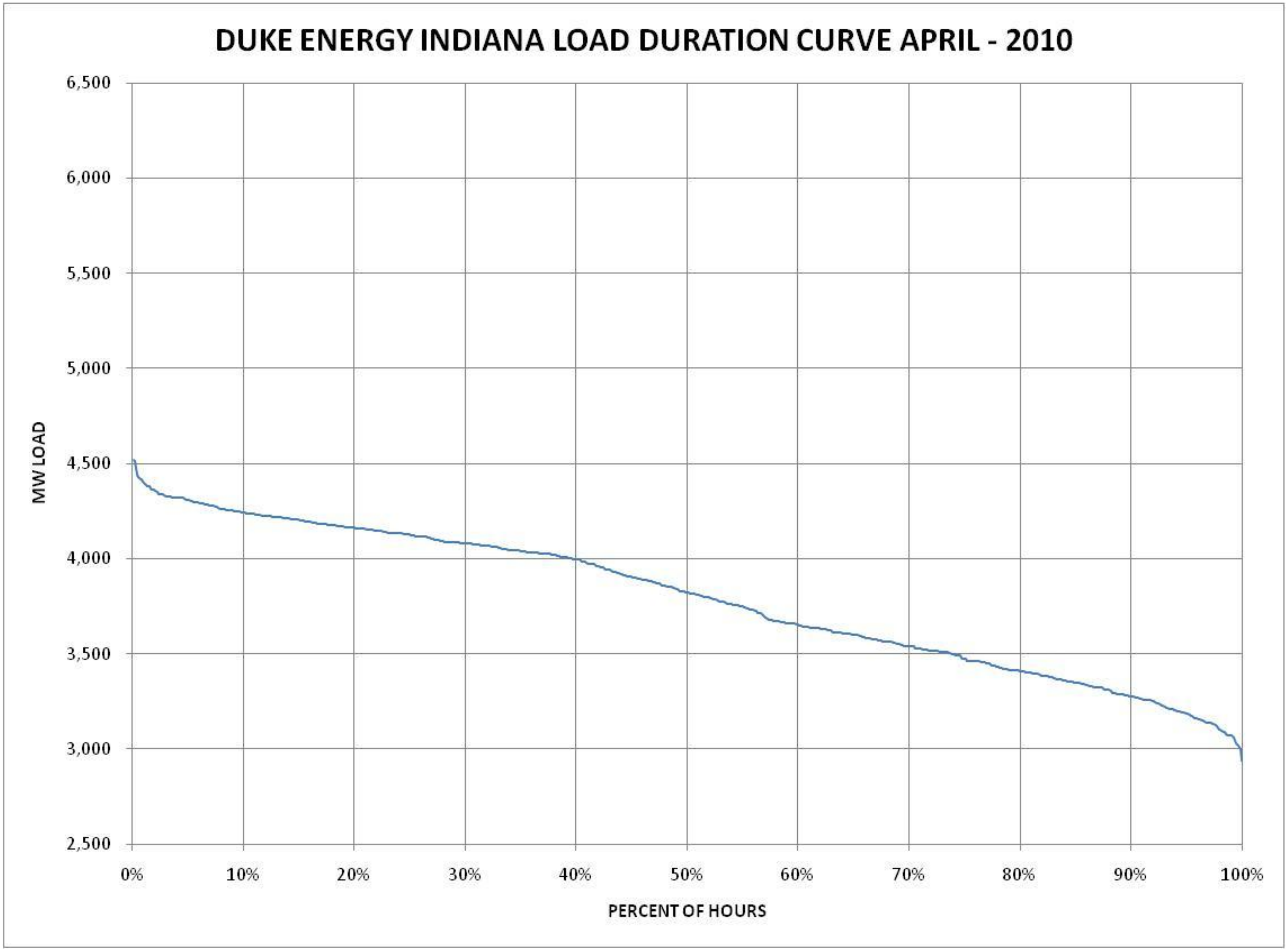
(C) Graphical representations of the monthly load shapes for January 2010 through December 2010 are attached. For the forecast period, no significant trends or changes from the historic load shapes are expected.

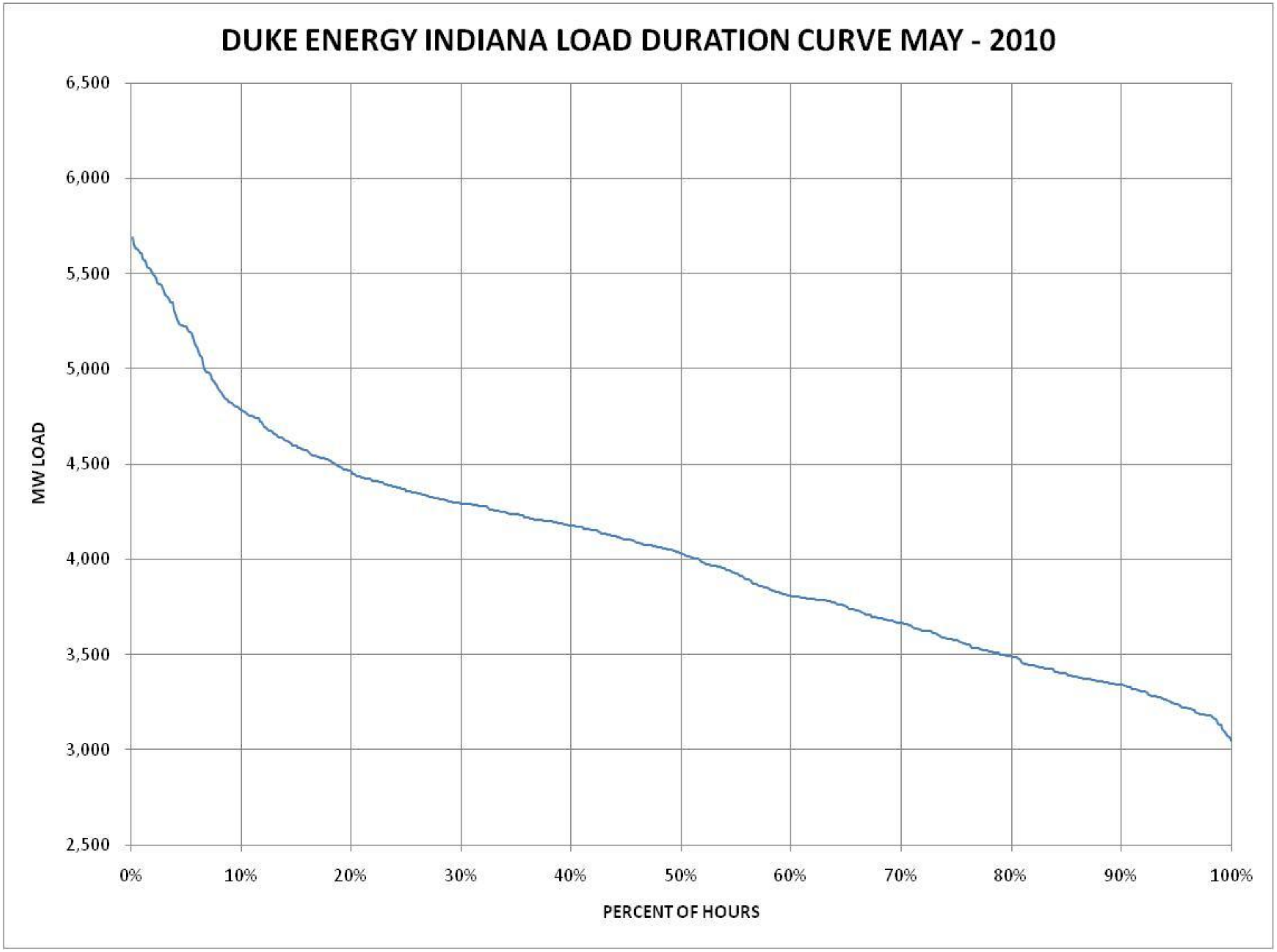

DUKE ENERGY INDIANA LOAD DURATION CURVE
2006 - 2010
MW LOAD
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS
2006
2007
2008
2009
2010

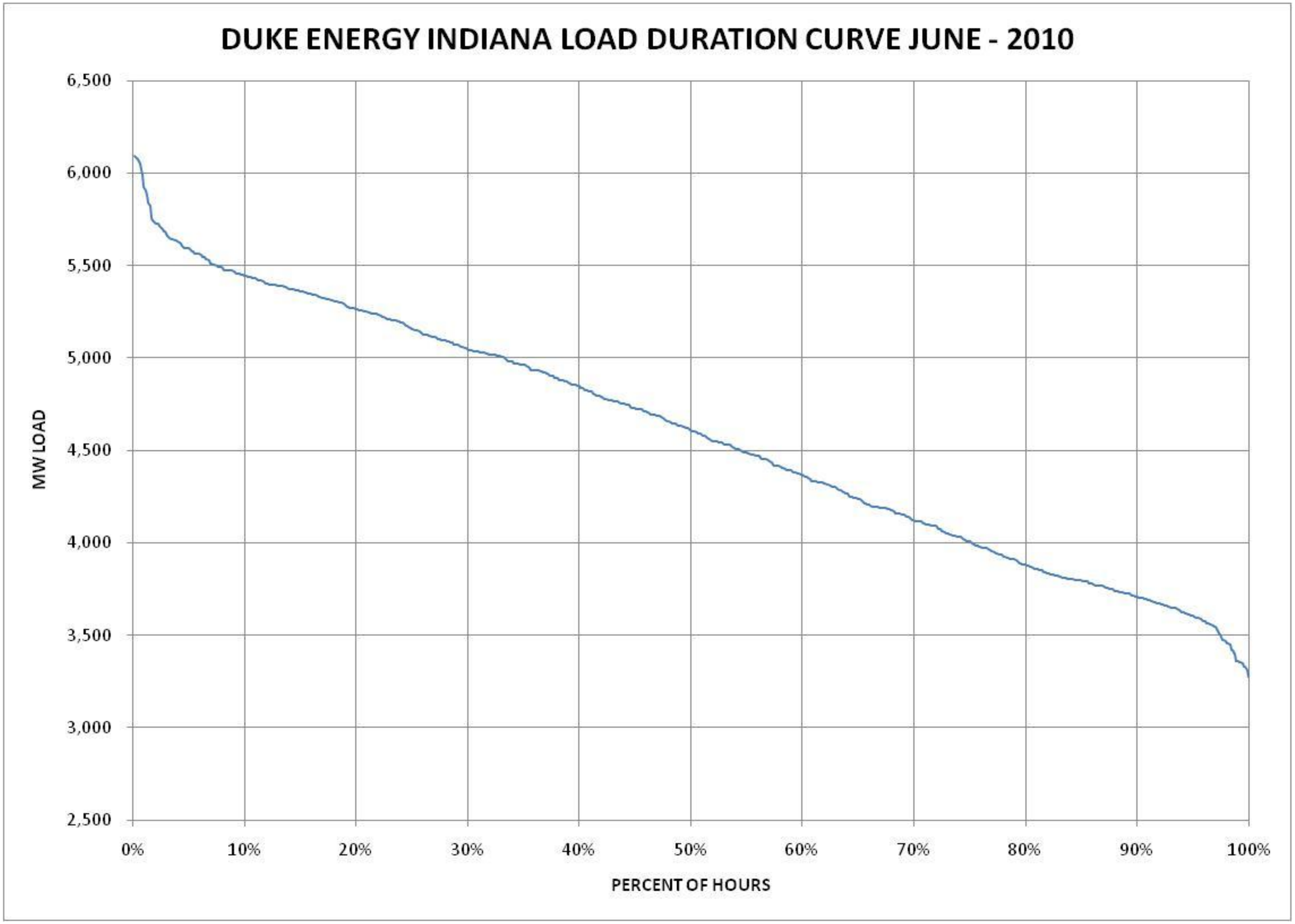

DUKE ENERGY INDIANA LOAD DURATION CURVE JANUARY - 2010
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

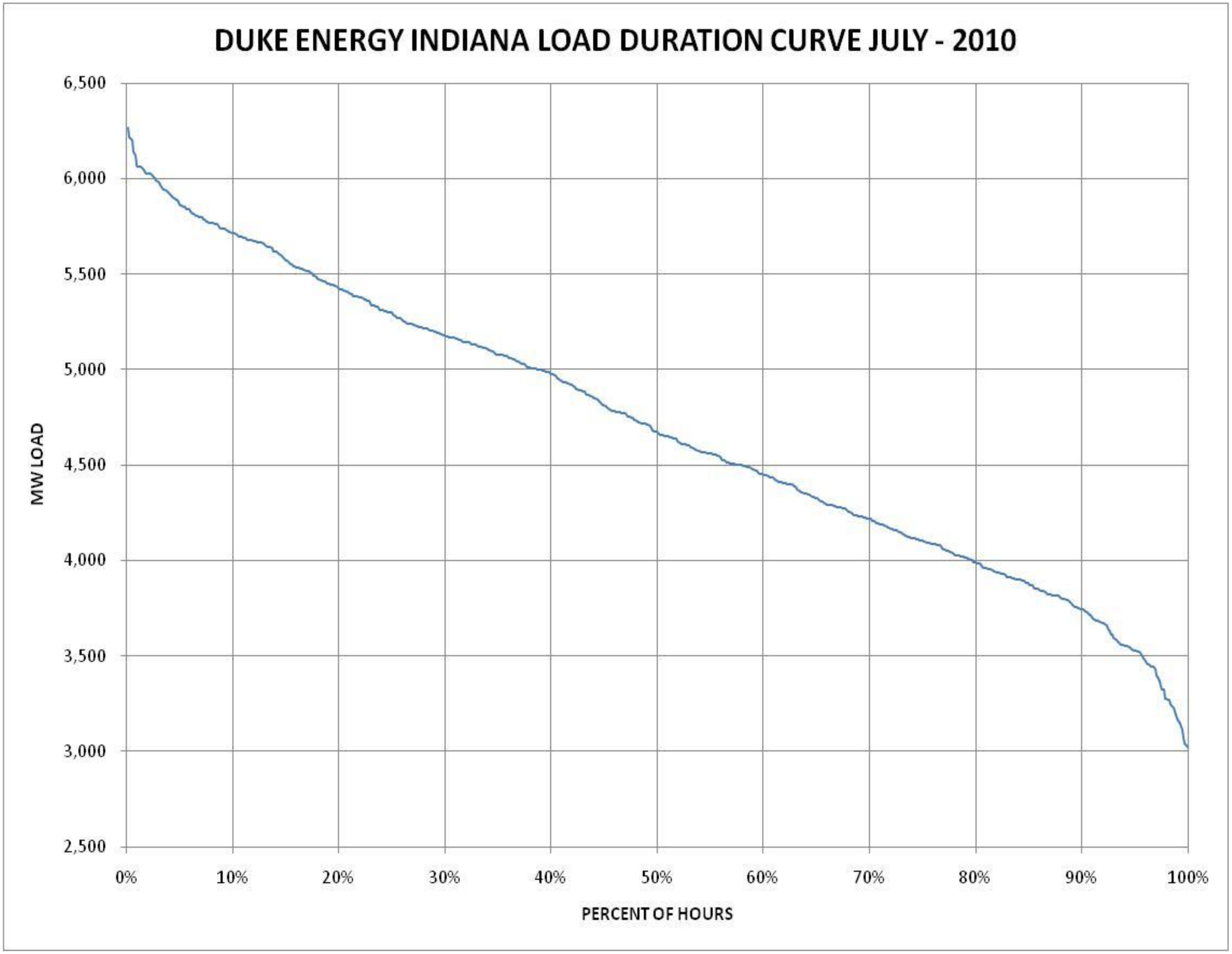

DUKE ENERGY INDIANA LOAD DURATION CURVE FEBURARY - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

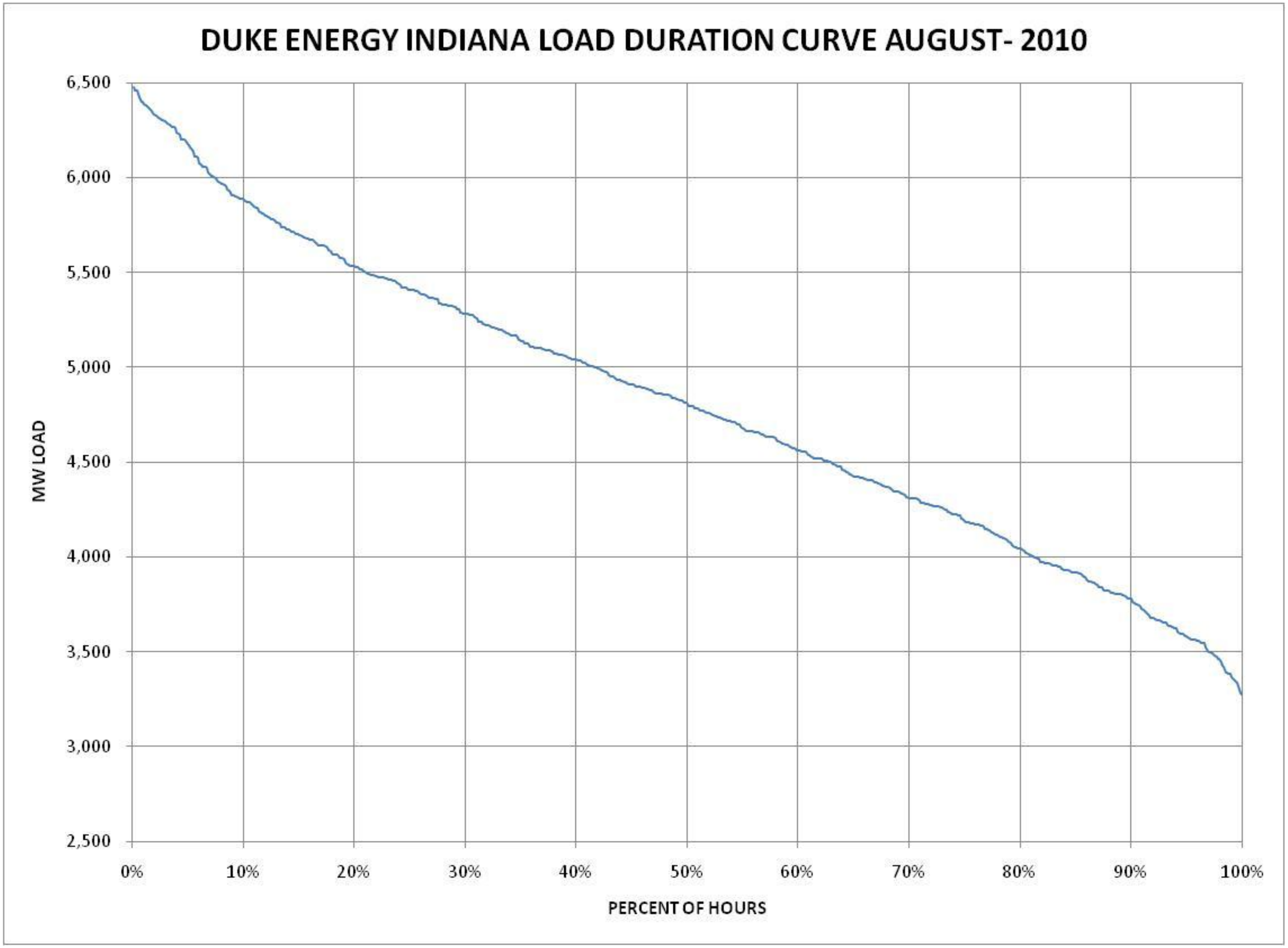

DUKE ENERGY INDIANA LOAD DURATION CURVE MARCH - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

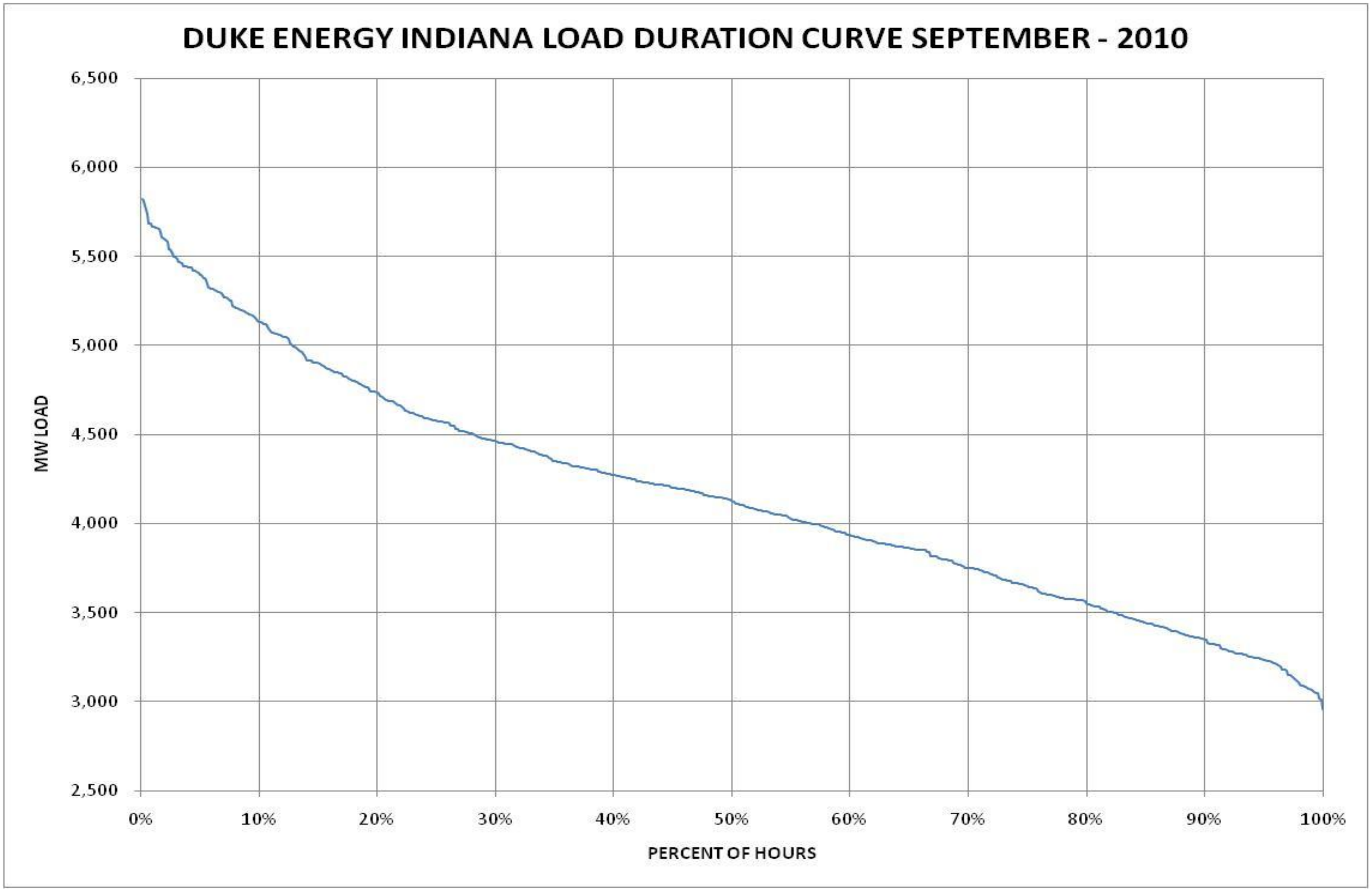

DUKE ENERGY INDIANA LOAD DURATION CURVE APRIL - 2010
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

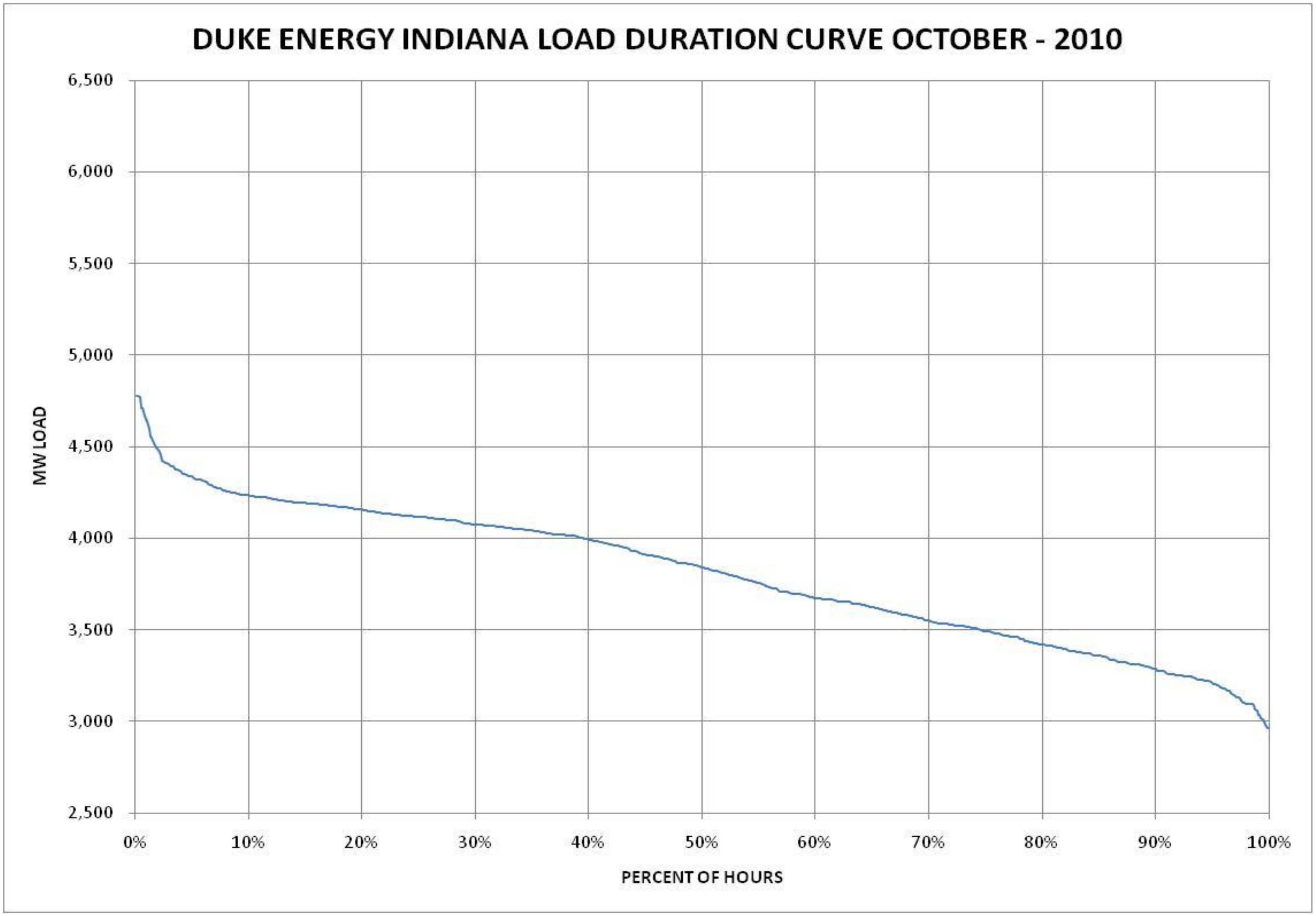

DUKE ENERGY INDIANA LOAD DURATION CURVE MAY - 2010
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

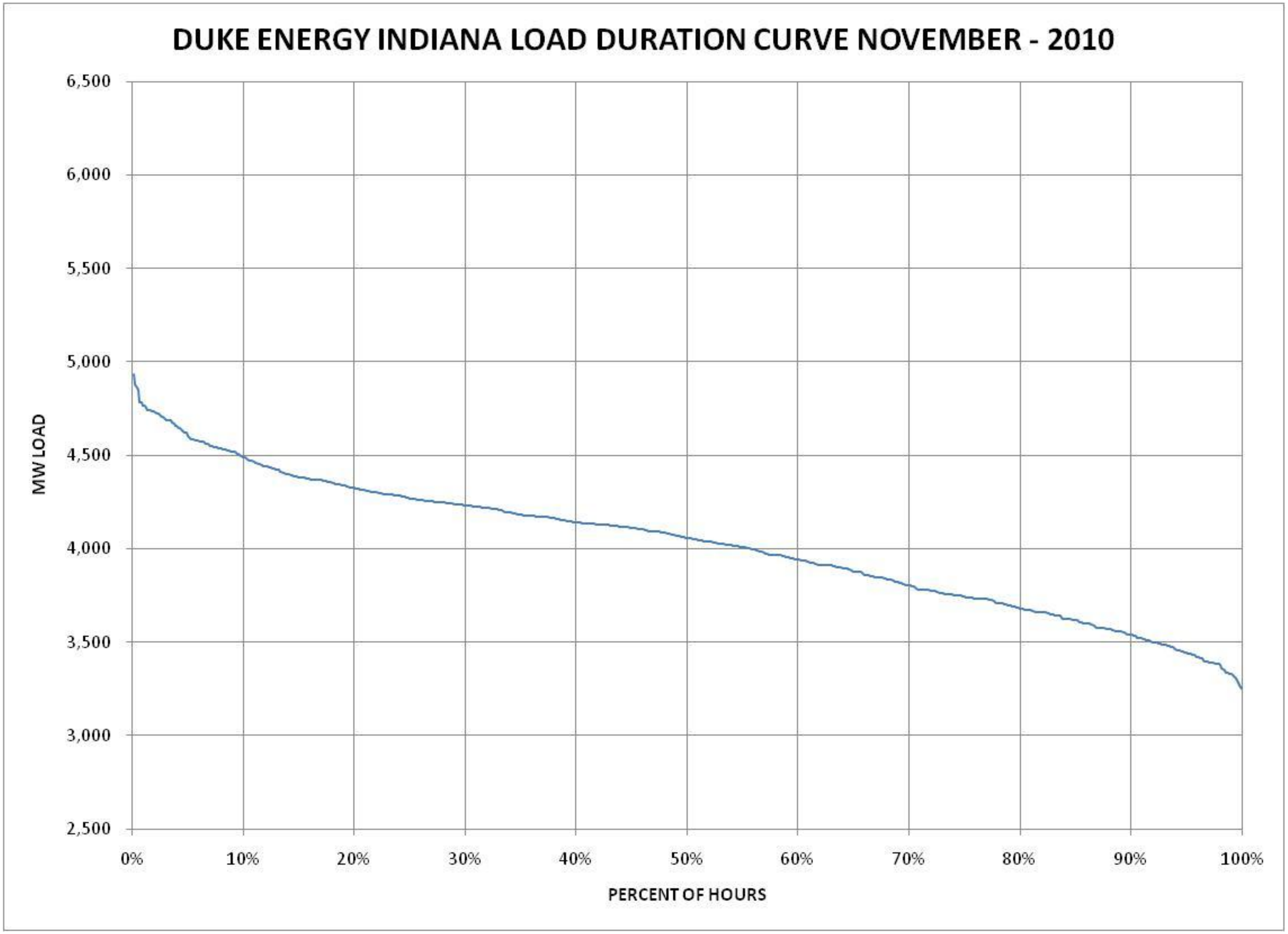

DUKE ENERGY INDIANA LOAD DURATION CURVE JUNE - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

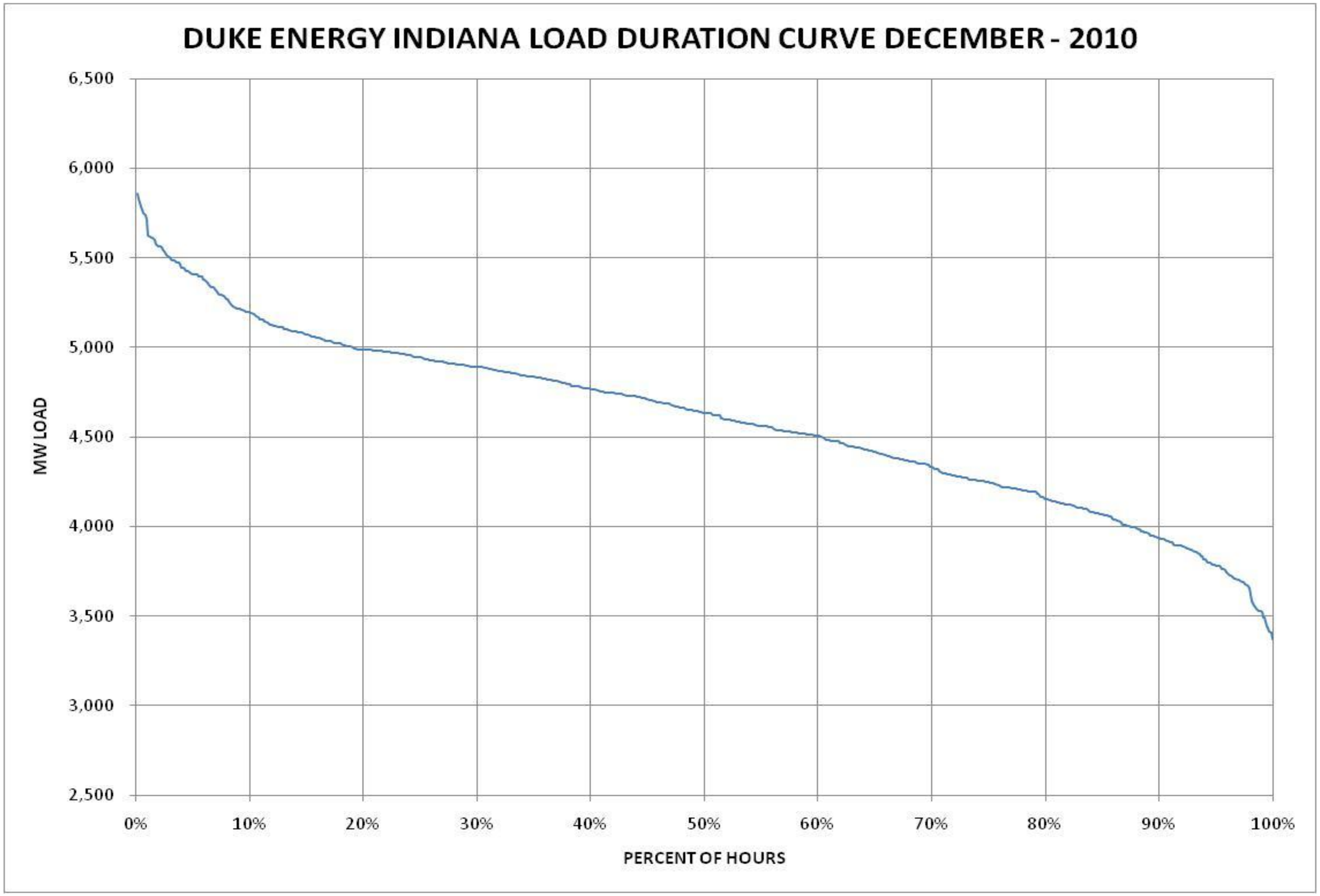

DUKE ENERGY INDIANA LOAD DURATION CURVE JULY - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

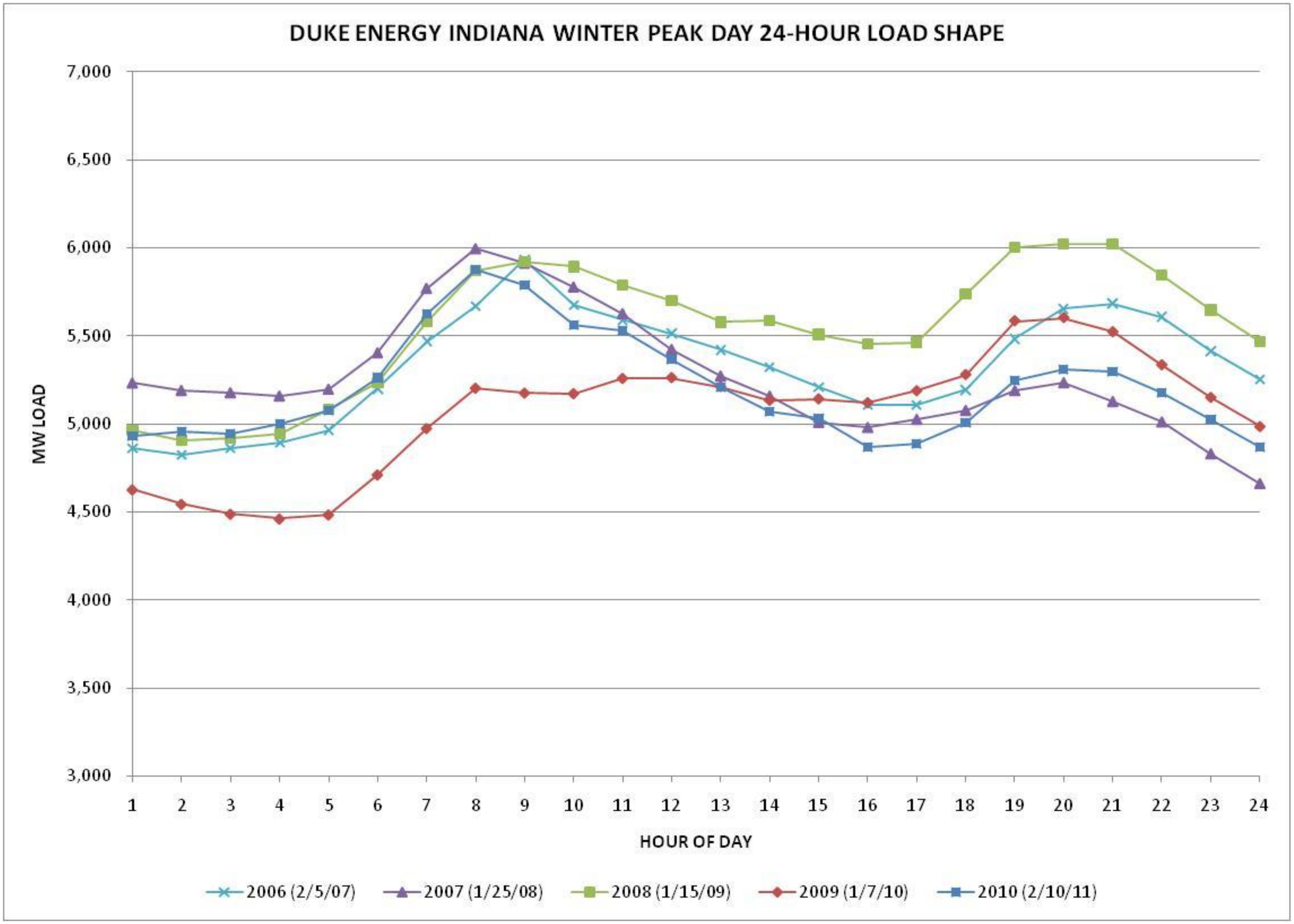

DUKE ENERGY INDIANA LOAD DURATION CURVE AUGUST- 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

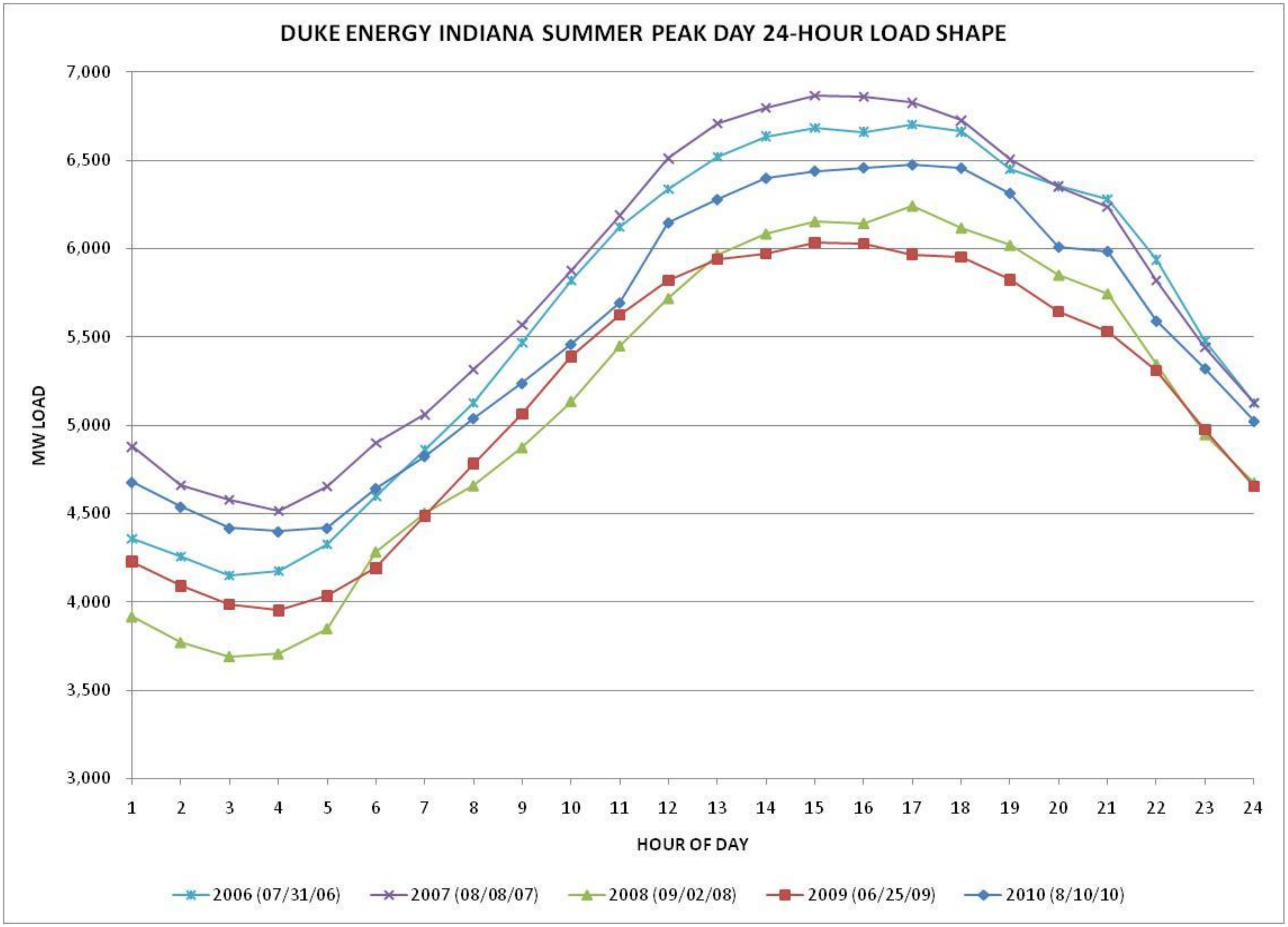

DUKE ENERGY INDIANA LOAD DURATION CURVE SEPTEMBER - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS


DUKE ENERGY INDIANA LOAD DURATION CURVE OCTOBER - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

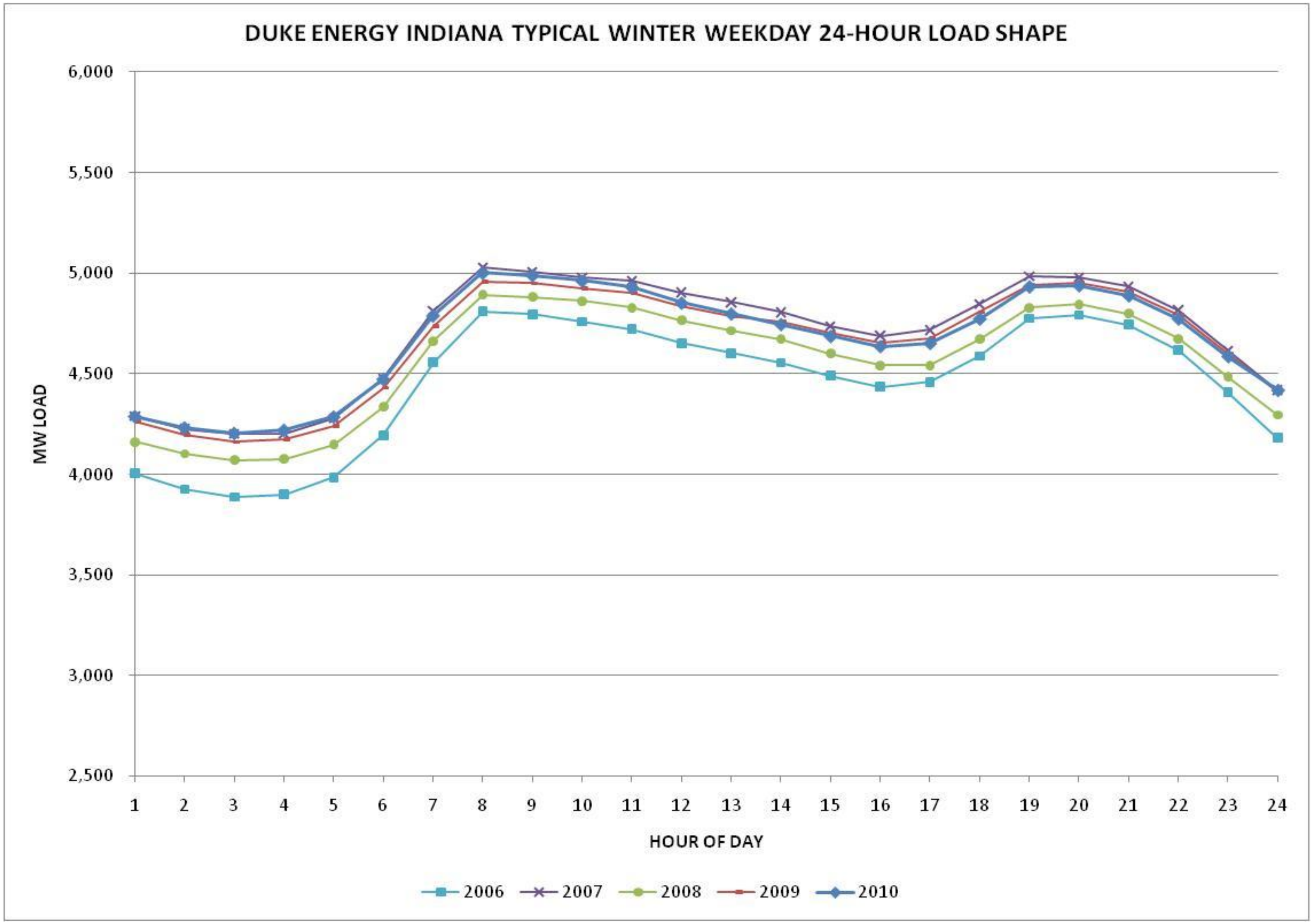

DUKE ENERGY INDIANA LOAD DURATION CURVE NOVEMBER - 2010
MW LOAD
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

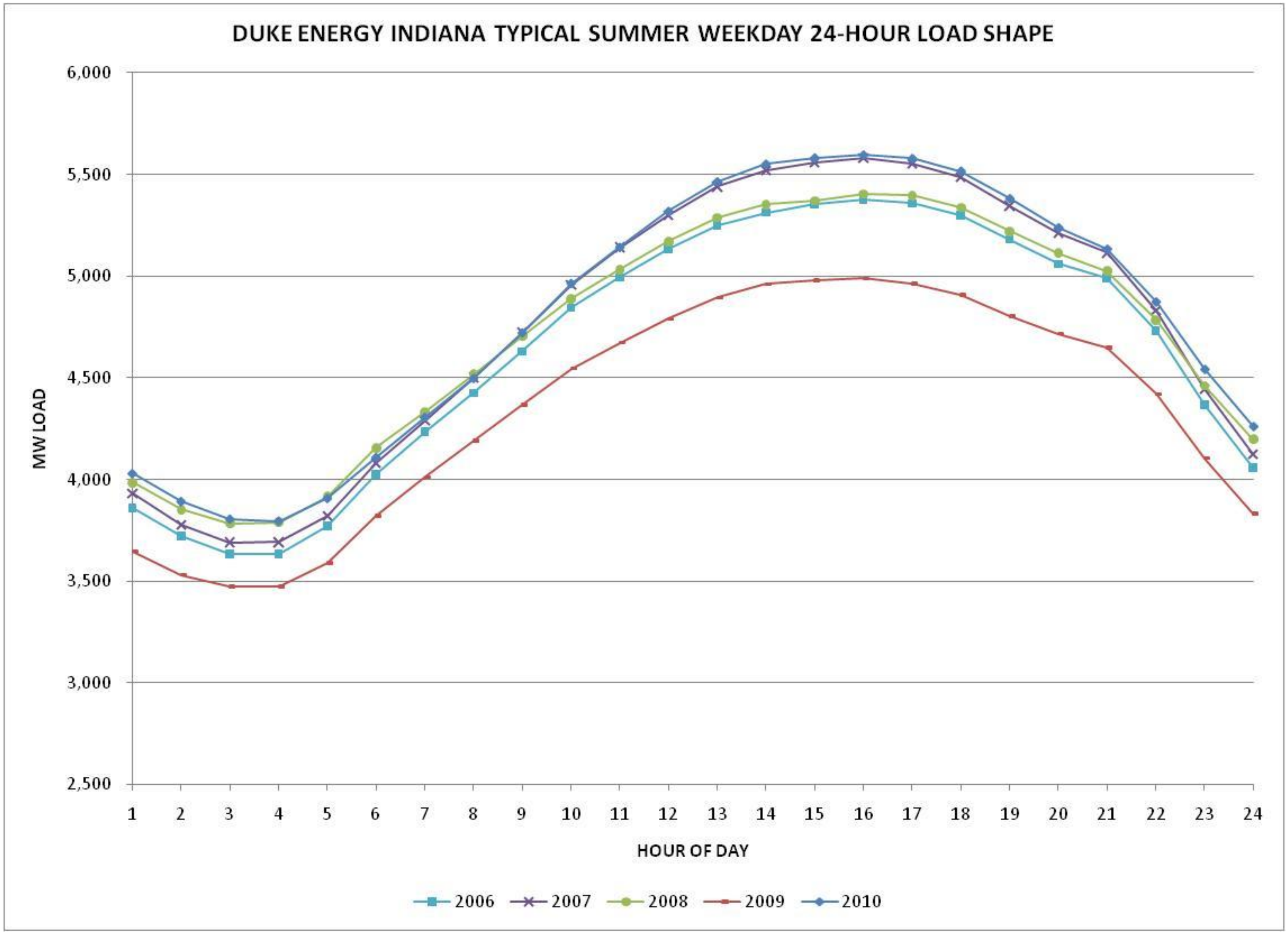

DUKE ENERGY INDIANA LOAD DURATION CURVE DECEMBER - 2010
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PERCENT OF HOURS

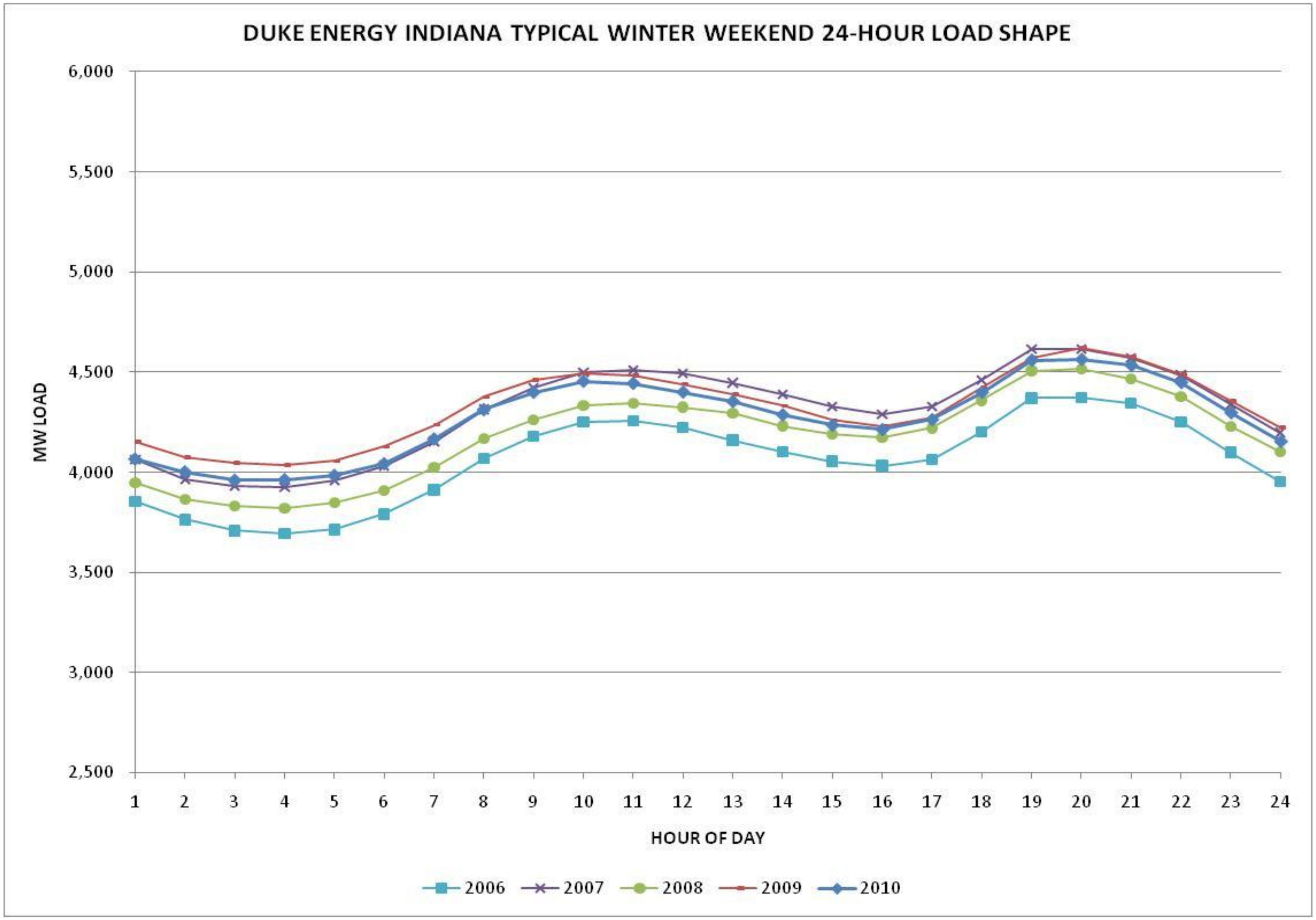

DUKE ENERGY INDIANA WINTER PEAK DAY 24-HOUR LOAD SHAPE
MW LOAD
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HOUR OF DAY
2006 (2/5/07)
2007 (1/25/08)
2008 (1/15/09)
2009 (1/7/10)
2010 (2/10/11)

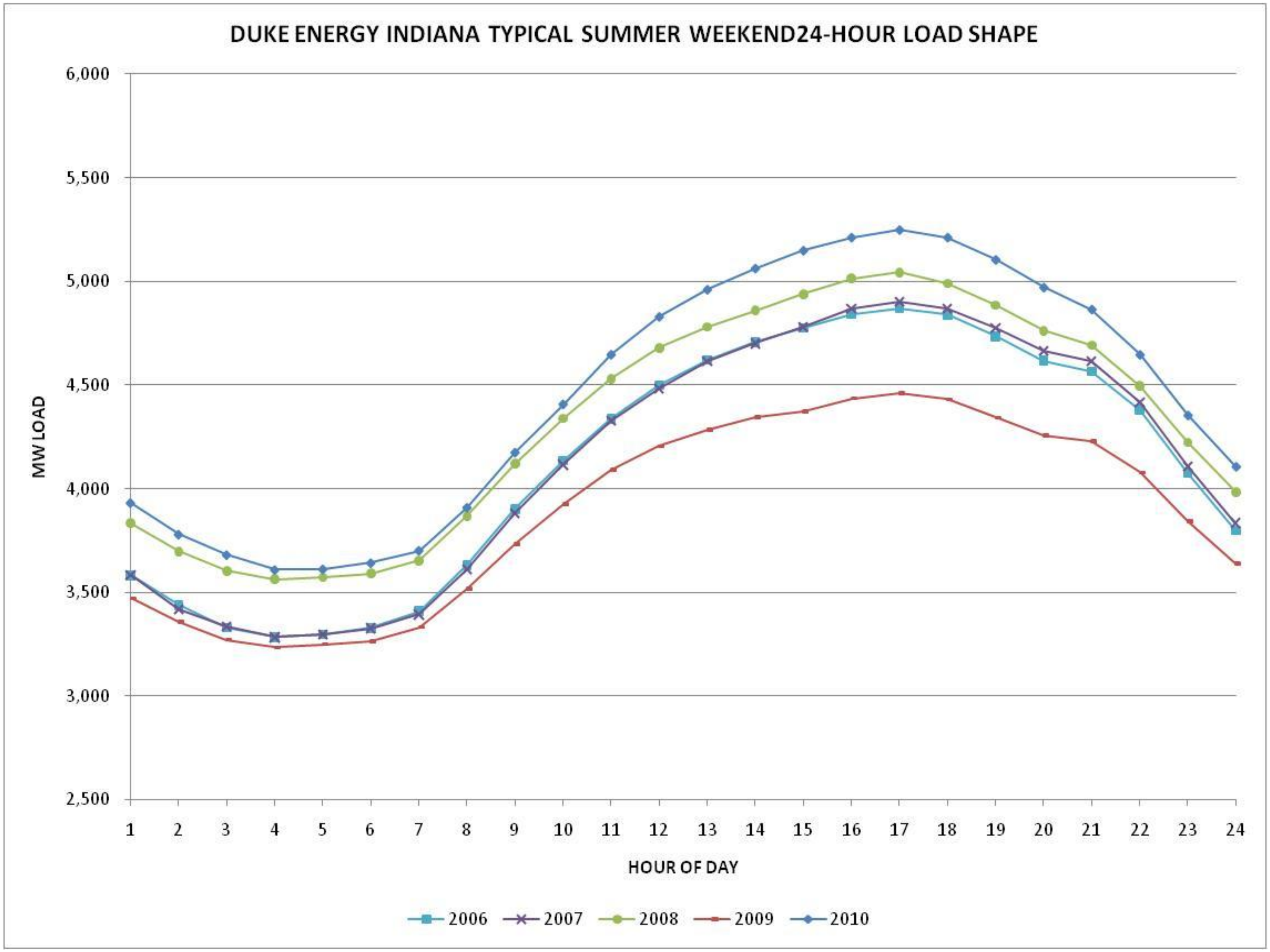


DUKE ENERGY INDIANA SUMMER PEAK DAY 24-HOUR LOAD SHAPE
MW LOAD
HOUR OF DAY
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
2006 (07/31/06)
2007 (08/08/07)
2008 (09/02/08)
2009 (06/25/09)
2010 (8/10/10)


DUKE ENERGY INDIANA TYPICAL WINTER WEEKDAY 24-HOUR LOAD SHAPE
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
HOUR OF DAY
2006
2007
2008
2009
2010

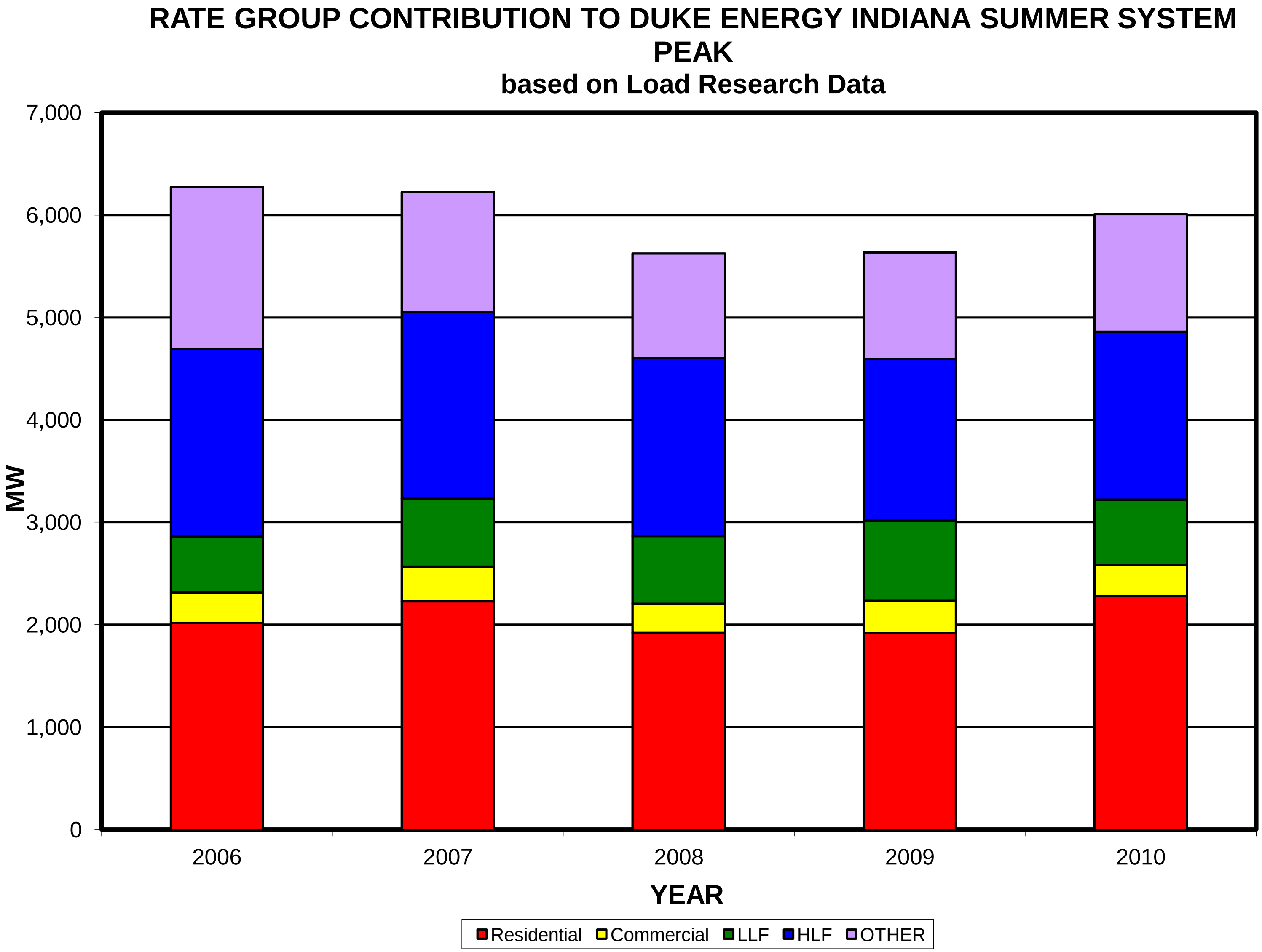

DUKE ENERGY INDIANA TYPICAL SUMMER WEEKDAY 24-HOUR LOAD SHAPE
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HOUR OF DAY
2006
2007
2008
2009
2010


DUKE ENERGY INDIANA TYPICAL WINTER WEEKEND 24-HOUR LOAD SHAPE
MW LOAD
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HOUR OF DAY
2006
2007
2008
2009
2010

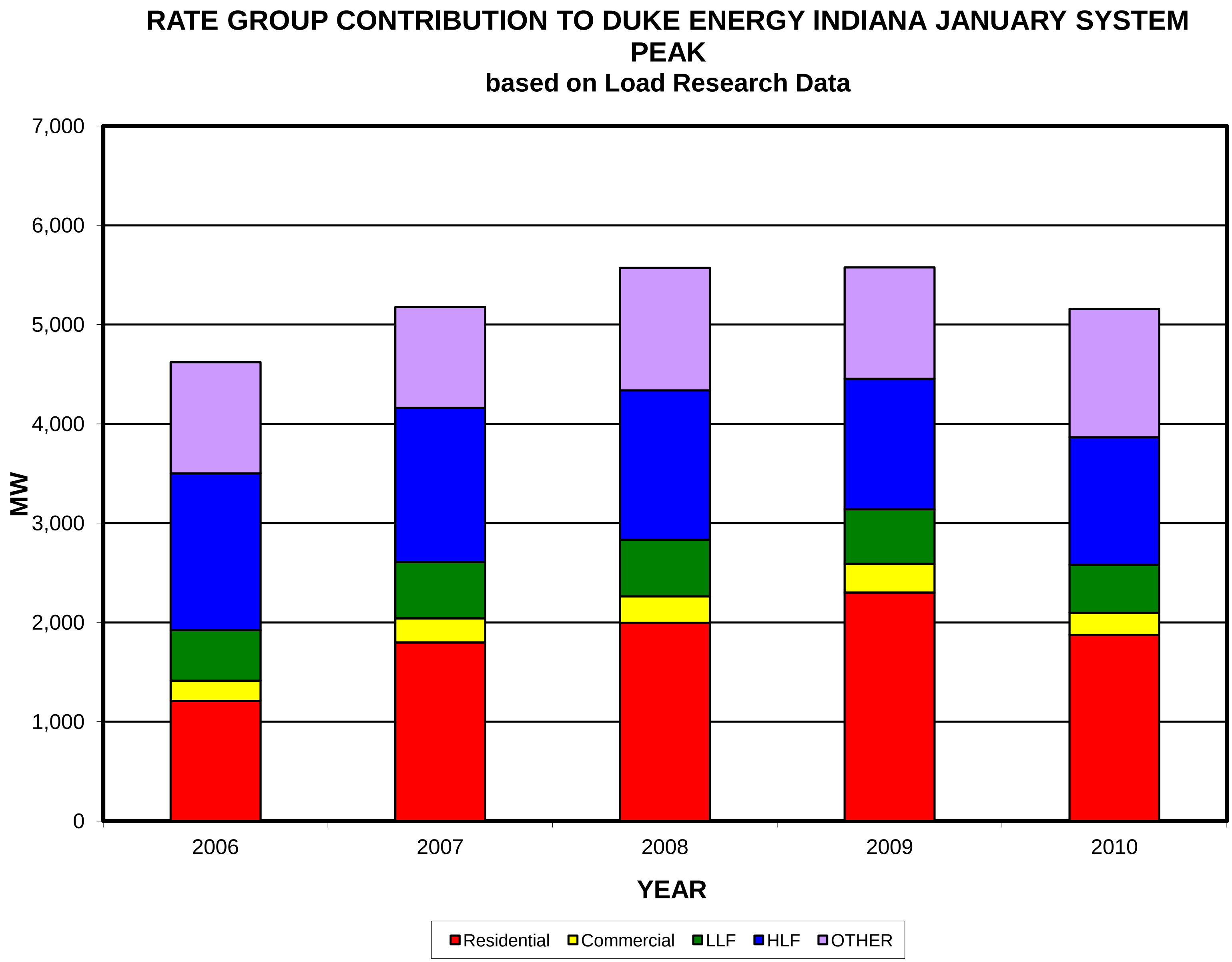

DUKE ENERGY INDIANA TYPICAL SUMMER WEEKEND24-HOUR LOAD SHAPE
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
MW LOAD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
HOUR OF DAY
2006
2007
2008
2009
2010

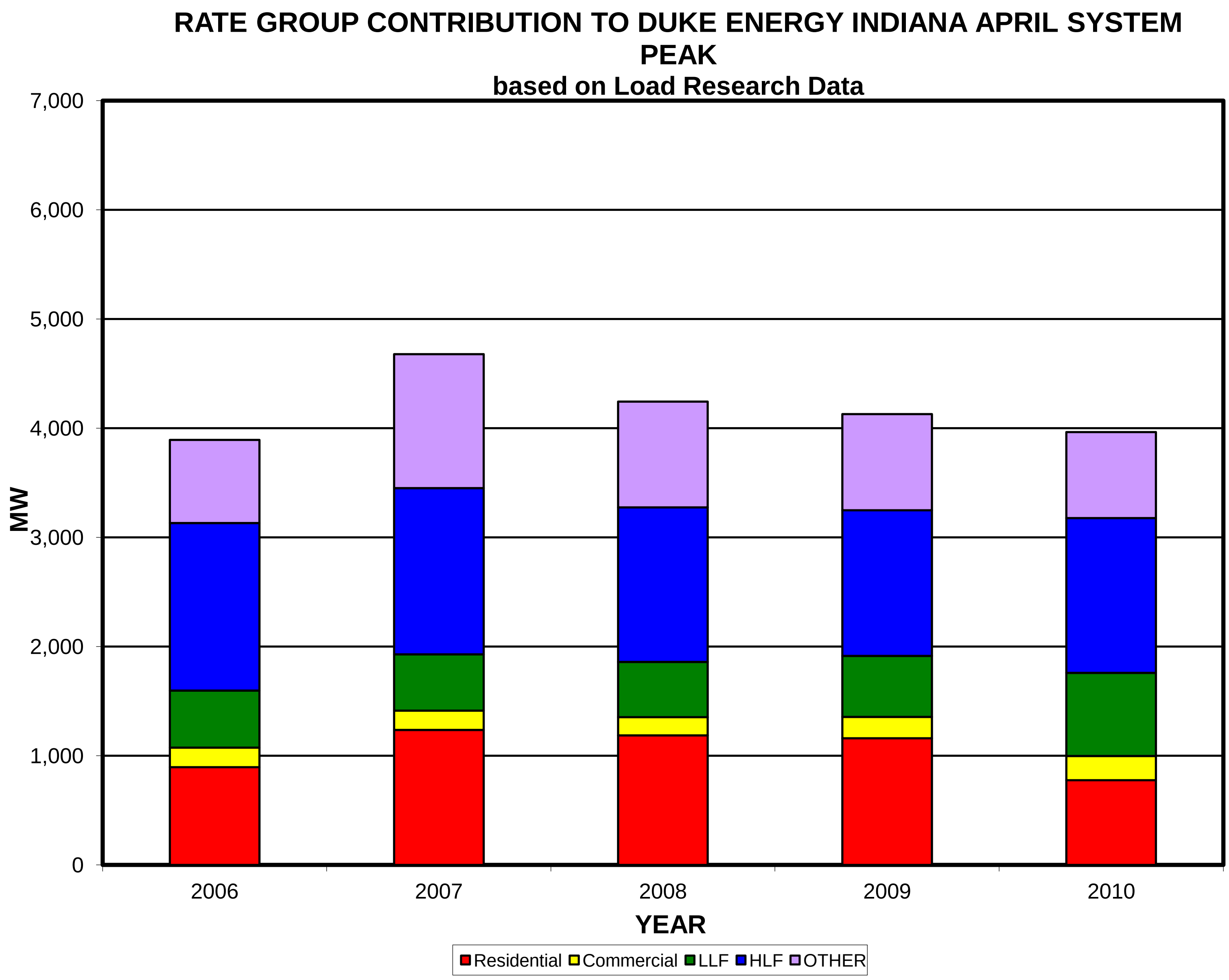
8. Disaggregated Load Shapes
(IURC Rule - Section 5(a)(2))

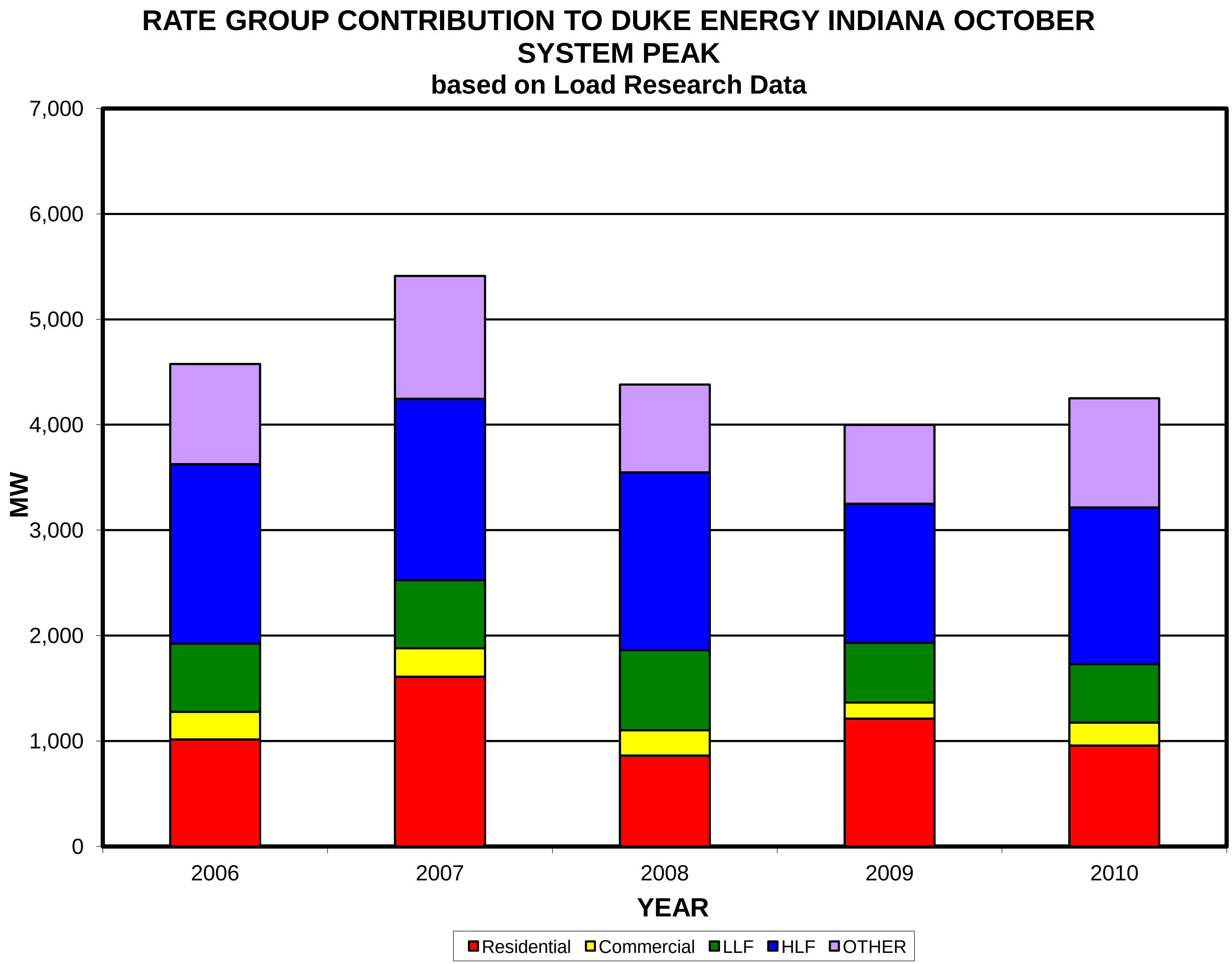
The graphs showing Rate Group Contribution to Duke Energy Indiana System Peaks for the years 2006 through 2010 are attached.



RATE GROUP CONTRIBUTION TO DUKE ENERGY INDIANA SUMMER SYSTEM PEAK
based on Load Research Data
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
MW
2006
2007
2008
2009
2010
YEAR
Residential
Commercial
LLF
HLF
OTHER


RATE GROUP CONTRIBUTION TO DUKE ENERGY INDIANA JANUARY SYSTEM PEAK
based on Load Research Data
MW
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2006
2007
2008
2009
2010
YEAR
Residential
Commercial
LLF
HLF
OTHER


RATE GROUP CONTRIBUTION TO DUKE ENERGY INDIANA APRIL SYSTEM PEAK
based on Load Research Data
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
MW
2006
2007
2008
2009
2010
YEAR
Residential
Commercial
LLF
HLF
OTHER


RATE GROUP CONTRIBUTION TO DUKE ENERGY INDIANA OCTOBER SYSTEM PEAK
based on Load Research Data
MW
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2006
2007
2008
2009
2010
YEAR
Residential
Commercial
LLF
HLF
OTHER

9. Weather-Normalized Energy and Demand Levels
(IURC Rule - Section 5(a)(4))

This information is contained in the attached table.

DUKE ENERGY INDIANA

ACTUAL AND WEATHER NORMALIZED PEAKS (MW)

SUMMER			WINTER		
YEAR	ACTUAL	WEATHER NORMALIZED		ACTUAL	WEATHER NORMALIZED
2001	6,101	6,224	2001-02	5,098	5,247
2002	6,250	6,397	2002-03	5,595	5,488
2003	6,269	6,564	2003-04	5,568	5,597
2004	6,136	6,409	2004-05	5,701	5,873
2005	6,766	6,692	2005-06	5,617	5,775
2006	6,702	6,739	2006-07	5,933	6,023
2007	6,866	6,804	2007-08	5,996	6,195
2008	6,243	6,493	2008-09	6,023	5,954
2009	6,037	6,194	2009-10	5,602	5,985
2010	6,476	6,491	2010-11	5,878	6,067

Note: Actual peak loads have been increased to include past impacts from demand response programs.

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Duke Energy®
Indiana

The Duke Energy Indiana 2011 Integrated Resource Plan

November 1, 2011

Appendix C: Energy Efficiency

APPENDIX C – Table of Contents

1. Avoided Cost for EE Screening
(IURC Rule - Sections 4(16) and Section 6(b)(3))

The avoided costs used in screening the Core Plus EE programs were based on information in the Core Plus Program filing (Cause No. 43955) made with the Commission. The Company considers this information to be a trade secret and confidential and competitive information. It will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Beth Herriman at (317) 838-1254 for more information.

2. Duke Energy Indiana EE Program Data
(IURC Rule - Sections 6(b)(6), (7) and 7(b))

The EE Core Plus Program Data is voluminous in nature. This data will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours. Please contact Beth Herriman at (317) 838-1254 for more information.

The table below provides key assumptions, cost-effectiveness test results, and projected penetrations for Core Plus Programs for the next three years. Similar information for the Core Programs is available from the Third Party Administrator.

	Impacts Per Participant[1]		Cost Effectiveness Test Results				Incremental Participation		
RESIDENTIAL CUSTOMER PROGRAMS	**KW**	**KWh**	**UCT**	**TRC**	**RIM**	**Participant**	**Year 1**	**Year 2**	**Year 3**
Online Home Energy Calculator	0.03	1,703.83	2.05	2.96	0.92	-	500	500	-
Personalized Energy Report	0.03	1,703.83	2.90	4.86	1.10	-	15,000	37,500	5,000
Smart$aver for Residential Customers - Central Air Conditioner	0.21	15,932.79	1.62	1.23	1.00	1.69	700	1,515	1,666
Smart$aver for Residential Customers - Heat Pump	0.40	38,953.98	3.67	2.78	1.57	2.97	1,300	2,523	2,776
Agency CFLs - Low Income Services (Agency Assitance Portal & CFLs)	0.07	3,407.65	4.75	13.21	1.25	-	1,000	2,500	-
Refrigerator Recycling	0.30	14,151.02	3.14	3.73	1.34	-	508	4,000	5,000
Freezer Recycling	0.22	10,499.42	1.58	1.77	0.95	-	101	400	800
Property Manager CFL	0.00	212.37	4.10	9.11	1.24	-	15,000	65,000	18,000
Tune and Seal	0.09	4,843.74	1.49	7.72	0.94	-	4,475	26,161	26,161
Home Energy Comparison Report	0.05	279.24	2.14	2.14	1.04	-	-	20,000	25,000
Power Manager	0.83	-	4.36	6.28	4.36	-	55,858	55,523	55,190
NON-RESIDENTIAL CUSTOMER PROGRAMS									
Smart$aver for Non-Residential Customers - HVAC	0.06	131.64	5.17	2.48	1.89	1.83	9,162	31,745	65,293
Smart$aver for Non-Residential Customers - Lighting	0.04	184.25	5.40	2.20	1.34	2.40	60,366	85,279	146,809
Smart$aver for Non-Residential Customers - Motors/Pumps/VFD	0.30	1,615.01	15.06	3.47	1.65	3.15	867	3,248	5,493
Smart$aver for Non-Residential Customers - Food Service	0.24	1,896.07	7.77	2.01	1.43	2.05	219	549	1,142
Smart$aver for Non-Residential Customers - Process Equipment	0.02	104.82	14.23	8.72	1.52	9.70	278	521	881
Smart$aver for Non-Residential Customers - Custom	1.89	11,506.02	7.73	1.88	1.46	1.89	764	683	1,102
PowerShare CallOption	1,074.00	-	3.95	38.56	3.95	-	143	155	160

1 - KWh impacts are cumulative for life of measure

3. Annual Penetrations Utilized for Duke Energy Indiana EE Programs
(IURC Rule - Sections 6(b) (8))

The Annual Penetrations are shown in the tables on the previous pages for each measure or program as applicable.

4. Benefit/Cost Test Components and Equations
(IURC Rule - Section 7(d)(1) and (2))

BENEFIT/COST TEST MATRIX					
Benefits:	Participant Test	Utility Test	Ratepayer Impact Test	Total Resource Test	Societal Test
Customer Electric Bill Decrease	X				
Customer Non-electric Bill Decrease	X				
Customer O&M and Other Cost Decrease	X			X	X
Customer Income Tax Decrease	X			X	
Customer Investment Decrease	X			X	X
Customer Rebates Received	X				
Utility Revenue Increase			X		
Utility Electric Production Cost Decrease		X	X	X	X
Utility Generation Capacity Credit		X	X	X	X
Utility Transmission Capacity Credit		X	X	X	X
Utility Distribution Capacity Credit		X	X	X	X
Utility Administrative Cost Decrease		X	X	X	X
Utility Cap. Administrative Cost Decrease		X	X	X	X
Non-electric Acquisition Cost Decrease				X	X
Utility Sales Tax Cost Decrease		X	X	X	
Costs:					
Customer Electric Bill Increase	X				
Customer Non-electric Bill Increase	X			X	
Customer O&M and Other Cost Increase	X			X	X
Customer Income Tax Increase	X			X	
Customer Capital Investment Increase	X			X	X
Utility Revenue Decrease			X		
Utility Electric Production Cost Increase		X	X	X	X
Utility Generation Capacity Debit		X	X	X	X
Utility Transmission Capacity Debit		X	X	X	X
Utility Distribution Capacity Debit		X	X	X	X
Utility Rebates Paid		X	X		
Utility Administrative Cost Increase		X	X	X	X
Utility Cap. Administrative Cost Increase		X	X	X	X
Non-electric Acquisition Cost Increase				X	X
Utility Sales Tax Cost Increase		X	X	X	

Benefit/Cost Ratio = Total Benefits/Total Costs

Indiana

The Duke Energy Indiana
2011 Integrated Resource Plan

November 1, 2011

Appendix D:
Financial Discussion Information

APPENDIX D – Table of Contents

1. Allowance Price Forecasts

The following figure (Figure D-1) contains the allowance price forecasts used in the development of this IRP. These forecasts are trade secrets and are proprietary to Wood Mackenzie Consulting and Duke Energy Indiana. The redacted information will be made available to appropriate parties upon execution of appropriate confidentiality agreements or protective orders. Please contact Beth Herriman at (317) 838-1254 for more information.

Figure D-1

Allowance Price Forecasts Nominal \$/Ton			
Year	Annual NO_x	Annual SO_2	Annual CO_2
2011	[redacted]	[redacted]	[redacted]
2012	[redacted]	[redacted]	[redacted]
2013	[redacted]	[redacted]	[redacted]
2014	[redacted]	[redacted]	[redacted]
2015	[redacted]	[redacted]	[redacted]
2016	[redacted]	[redacted]	[redacted]
2017	[redacted]	[redacted]	[redacted]
2018	[redacted]	[redacted]	[redacted]
2019	[redacted]	[redacted]	[redacted]
2020	[redacted]	[redacted]	[redacted]
2021	[redacted]	[redacted]	[redacted]
2022	[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]
2029	[redacted]	[redacted]	[redacted]
2030	[redacted]	[redacted]	[redacted]
2031	[redacted]	[redacted]	[redacted]

Note:

Seasonal NO_x allowance prices are assumed to be the same as the annual value.

2. IRP PVRR

The 2011 Present Value Revenue Requirement (PVRR) obtained from the Planning and Risk (PaR) output for the 2011 IRP is [redacted] billion. The effective after-tax discount rate used was 7.30%.

The modeling in PaR does not include the existing rate base (generation, transmission, or distribution). In addition, with the inclusion of estimates of both spot market purchases from, and sales to, the MISO market within the PaR modeling, Present Value Average Rate figures would not accurately reflect projected customer rates, so they have been omitted.

Duke Energy Indiana considers the PVRR to be confidential and competitive information. It will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Beth Herriman at (317) 838-1254 for more information.

3. Annual Avoided Cost
(IURC Rule - Section 8(8)(C))

The annual avoided costs for the plan in this IRP are based on the market price forecast. Wood-MacKenzie considers this forecast to be a trade secret and confidential and competitive information. It will be made available to appropriate parties for viewing at Duke Energy Indiana offices during normal business hours upon execution of an appropriate confidentiality agreement or protective order. Please contact Beth Herriman at (317) 838-1254 for more information.

4. Impact of a Planned Addition on Rates
(IURC Rule - Section 8(8)(D))

Information concerning the impact of each individual planned resource addition by itself is not available because an IRP, by definition, is an integrated combination of resources which together provide energy services in a reliable, efficient, and economic manner while factoring in environmental considerations.

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Duke Energy® Indiana

The Duke Energy Indiana 2011 Integrated Resource Plan

November 1, 2011

Appendix E: Short-Term Implementation Plan

PREFACE

This section, entitled The Duke Energy Indiana 2011 Integrated Resource Plan Short-Term Implementation Plan, contains Duke Energy Indiana's plan for implementing supply-side resources and energy efficiency program resources over the next several years. The supply-side resources are forecast for the period 2011 through 2013. As explained herein, the energy efficiency resources to be implemented by Duke Energy Indiana are forecast through 2013. The names of some of the programs may differ slightly from those contained in previous filings as programs are continually reviewed.

APPENDIX E – Table of Contents

SHORT-TERM IMPLEMENTATION PLAN

1. Supply-Side

Edwardsport Integrated Gasified Combined Cycle (IGCC) Project

Project Description

The 2003 IRP indicated a need for coal-fired base load capacity generally beginning in the 2013 timeframe. The 2005 IRP indicated that need beginning 2011, whereas the 2007 IRP indicated the need in 2012. The IGCC project at Edwardsport is generally re-using an existing power plant location for the new facility. It also entails the retirement of approximately 160 MW of existing steam generation capability there consisting of three units that entered service during the mid-1940s to the early 1950s.[18] Duke Energy Indiana was awarded a CPCN for this project in Cause Nos. 43114 and 43114-S1 in November 2007.

The IGCC 600 MW class "unit" uses gasification technology to convert coal feedstock into syngas, which is then cleaned and burned in a combined cycle power plant to produce electricity. The gasification process will include two gasifier trains, with each one generating enough syngas to fully fuel one of the combustion turbine (CT) units. The heat exhaust from the CTs will feed two heat recovery steam generators (HRSGs) which then utilize the heat to create steam to operate a single steam turbine generator. The plant will also utilize natural gas for plant start-up, co-firing and as a back-up fuel for the CT units. Additional detail may be found in Chapter 5.

Goal of Edwardsport IGCC Project

The goal of the Edwardsport IGCC Project is to design, procure, construct, and operate a quality IGCC plant with the features and components necessary to utilize local coals, to

[18] Edwardsport units 6-8 were retired March 1, 2011.

enable Duke Energy Indiana to provide reliable, clean, efficient, and cost-effective electric utility service.

Time Frame and Estimated Costs

The current high-level timeframe milestones are listed below in bullet format; however, the estimated future milestone may be revised as the project progresses:

- January 2005 – Awarded/Initiated Feasibility Study with GE and Bechtel
- February 2006 – Awarded/Initiated FEED Study with GE/Bechtel
- 3rd QTR 2006 – Filed for CPCN with IURC
- 3rd QTR 2006 – File Air Permit Application with IDEM
- 1st QTR 2007 – FEED Study Completed
- 4th QTR 2007 – CPCN Approved by IURC
- 1st QTR 2008 – Received Air Permit from IDEM and Construction Start
- 3rd QTR 2012 – Commercial Operation

Edwardsport IGCC Project status reports and requests for recovery for certain costs are filed with the IURC every six months as required by the order in Cause No. 43114.

Markland Hydro Re-Licensing Project

Project Description

Duke Energy Indiana received a new license for the Markland Hydro facility located in Switzerland County, in Florence, Indiana on September 7, 2010, from the Federal Energy Regulatory Commission (FERC). The original license for the facility was issued by the FERC on May 31, 1961, and expired April 30, 2011. The new license was effective May 1, 2011.

Goal of Markland Hydro Project

The goal was to obtain an operating license for the Markland hydro facility so that this resource can continue to be relied upon to supply low-cost renewable energy to Duke Energy Indiana customers. The term of the New License is for a period of 30 years.

Criteria and Objectives for Monitoring Success

The success of the project is determined based upon performance to budget and achieving scheduled milestones.

Time Frame and Costs

The application process high-level timeframe milestones are listed below in bullet format:

- May 2005 – Determined agency support for Traditional Licensing Process (TLP).
- June 2005 – File letter requesting early approval of TLP with FERC.
- December 2005 – Solicited issues/information gaps from Agencies/stakeholders.
- November 2005-March 31, 2006 – Prepared and issued Pre-Application Document (PAD) and submitted Notice of Intent (NOI) to FERC.
- May 2006 – Joint Agency Meeting/ 1st Public Meeting.
- July 2006 – Received written comments from agencies on PAD / NOI.
- September 2006 – Agency meetings to discuss and finalize environmental study plans.
- October 2006 – Began development of studies: Water Quality; Rare, Threatened and Endangered Species; Recreational; and Fish Entrainment.
- November 2007 – Issued study results for Recreation, and Rare, Threatened and Endangered Species.
- April 2008– Issued study results for Water Quality and Fish Entrainment.
- June 2008 – Meet with Agencies to discuss Protection, Mitigation and Enhancement (PME) Measures.
- July 2008 – Issued Draft Application for Public Comment.
- October 2008 – Received stakeholders' comments on Draft License Application.

- February 2009 – Agency meeting to finalize PME Measures
- April 24, 2009 – Filed Final License Application.
- August 3, 2009 – FERC accepted the Application for New License and issued a request for additional information.
- August 17, 2009 - FERC issued Project Scoping Document.
- September 4, 2009 – Duke filed for the 401 Water Quality Certification from the Indiana Department of Environmental Management (IDEM).
- September 17, 2009 – FERC held the Project Scoping Meetings in Vevay, IN.
- October 29, 2009 – Duke filed additional information request.
- November 25, 2009 – FERC issued the Ready for Environmental Analysis (REA).
- January 25, 2010 Deadline for filing comments, recommendations and agency terms and conditions/prescriptions.
- May 21, 2010– FERC issued the Environmental Assessment.
- September 7, 2010 – FERC issued new operating license which became effective May 1, 2011.

Budgeted costs of the re-licensing project are indicated below:

Actual Costs

2005 – 2011 $2,703,244

Planned Purchases

Project Description

The following table details purchases associated with the 2011 IRP.

Purchases
2011 - 2014

Year	Company	Purchase Type	MW(1)
2011	Benton Cty. Wind	Renewable (Wind)	100 (2)
	Logansport	Gas Combustion Turbine	8
2012	Benton Cty. Wind	Renewable (Wind)	100 (2)
	Logansport	Gas Combustion Turbine	8
2013	Benton Cty. Wind	Renewable (Wind)	100 (2)
	Logansport	Gas Combustion Turbine	8
2014	Benton Cty. Wind	Renewable (Wind)	100 (2)
	Logansport	Gas Combustion Turbine	8

NOTES: (1) Rounded to the nearest full MW
(2) 10 MW assumed capacity value at the time of summer peak

Additionally, Duke Energy Indiana routinely executes energy hedge trades which provide Duke Energy Indiana price certainty and reduce customers' exposure to energy price volatilities.

Goal of Project

The goal is to make purchases to supplement Duke Energy Indiana's other resources to maintain a minimum 14.2% reserve margin.

Criteria and Objectives for Monitoring Success

The success of the project is determined based upon implementing the required purchases.

2. Environmental Compliance

Duke Energy Indiana Phase 1 CAIR/CAMR Compliance

Project Description

Duke Energy Indiana has added SO_2 control technologies to some of its existing generating units as part of its compliance strategy with Phase 1 of the Clean Air Interstate Rule (CAIR) which was finalized in early 2005 by US EPA. In addition, in response to the NO_x provisions of the CAIR, the existing SCR NO_x controls on five of Duke Energy Indiana's generating units were required to operate annually beginning in 2009. The provisions of the Cross State Air Pollution Rule (CSAPR) will supersede the CAIR beginning in 2012 and mandate and justify the continued service of these controls.

Goal of Project

The goal of the project is to comply with applicable Federal and State environmental requirements, and continue to reliably supply low-cost energy to Duke Energy Indiana customers.

Criteria and Objective for Monitoring Success

The success of the projects is determined based upon performance as measured by emission removal efficiency of the equipment, compliance to the budget and emission allowance trading provisions of the rules, and project budget and schedule.

Anticipated Time Frame and Estimated Costs

Compliance with the CAIR NO_x regulations began in 2009 and compliance with the CAIR SO_2 regulations began in 2010. CSAPR compliance for both SO_2 and NO_x will begin in 2012. Duke Energy Indiana completed its CAIR Phase 1 construction program in the fall of 2008. The remaining expenditures related to Phase 1 efforts are generally related to completing land-fill additions and/or expansions associated with the emission control equipment additions, as well as performing ongoing SCR catalyst replacement projects. Estimates are indicated below. For jointly-owned Gibson Unit 5, only the capital budgeted to be spent by Duke Energy Indiana is included, *i.e.*, Duke Energy Indiana's share.

	Estimated Costs
2012	$9.8 million
2013	$5.6 million
2014	$3.9 million
2015	$ 2.7 million
2016	$ 5.8 million

As discussed in Duke Energy Indiana's Environmental Cost Recovery filings, the costs may vary from the amounts indicated, depending on fluctuations in steel prices, labor availability, and construction program cost savings.

Duke Energy Indiana Initial Phase 2 CSAPR and Utility Air Toxics Maximum Achievable Control Technology (MACT) Rule Compliance Planning

Project Description

The current planning analysis indicates that there are additional required projects that would need to be undertaken to bring several of the Duke Energy Indiana Units into compliance with the modeled MACT rule. This includes baghouses at Gibson Units 3, 4, and 5; mercury re-emission chemical at Gibson Units 1 and 2; mercury re-emission and oxidation chemicals at Cayuga Units 1 and 2; and activated carbon injection (ACI) in the existing baghouses at Gallagher Units 2 and 4. Costs for additional emissions monitors for MACT rule compliance are included as well. In addition, for compliance with the CSAPR, the final 1-hour SO_2 NAAQS, and the pending new ozone standard, Duke Energy Indiana projects the need to install SCRs and dibasic acid addition at Cayuga Units 1 and 2; SNCRs at Gallagher Units 2 and 4; dibasic acid addition on Gibson Units 1, 2, and 3; and to replace the existing scrubber on Gibson Unit 5. Besides these specific air emission related projects, Duke Energy Indiana also projects the installation of other water and waste related controls at these units, including dry ash management systems; upgraded waste water treatment systems; and cooling water intake upgrades.

Similar projects, including baghouses, scrubbers, SCRs and/or SNCRs, lower sulfur content fuels, and waste and water projects would also otherwise be needed at the Wabash River Station. However, the analysis performed in this IRP suggests that these investments would not be cost-effective compared to retirement and replacement of that station. Therefore, no environmental projects or costs are included here. Please see the Supply-Side Resources section of this IRP for the discussion of options to replace the Wabash River Station.

Given the current uncertainty in the future regulations, Duke Energy Indiana may not implement these projects until more is known about the final rules. When sufficient confidence exists, Duke Energy Indiana would present these projects to the Commission for review and approval.

Goal of Project

The goal of the project is to comply with applicable Federal and State environmental requirements, and continue to reliably supply low-cost energy to Duke Energy Indiana customers.

Criteria and Objective for Monitoring Success

The success of the projects is determined based upon performance as measured by emission removal efficiency of the equipment, and project budget and schedule.

Anticipated Time Frame and Estimated Costs

The construction of the proposed projects for MACT rule compliance would have to be completed by approximately 1/1/2015 in order to comply with the November 2011 proposed rule. This is an extraordinarily short timeframe to implement such a large construction program. Duke Energy Indiana believes that it would have to seek relief under the provision of the proposed MACT rule allowing a one year extension of time for compliance, especially for the Gibson baghouse projects. For planning purposes, it is assumed that this relief is granted and that some projects may go into service in 2015.

The Gibson Unit 5 scrubber replacement is assumed to be placed in service in 2017; however, this continues to be evaluated for schedule advancement. The balance of the assumed NO_x and SO_2 controls, including the Cayuga SCRs, Gallagher SNCRs, and dibasic acid systems are assumed to be placed in service between 2017 and 2018. The installation timing for the water and waste projects varies by station depending on variables such as the anticipated timing of the rules and the operating permit renewal schedules for each station.

The estimated capital expenditures are indicated below. For jointly-owned Gibson Unit 5, only the capital budgeted to be spent by Duke Energy Indiana is included, *i.e.*, Duke Energy Indiana's share.

Estimated Capital Costs

2012	$141.9 million
2013	$309.5 million
2014	$399.1 million
2015	$474.3 million
2016	$263.1 million

Also see Chapter 6 for information related to environmental compliance planning.

3. Energy Efficiency

Due to the current state of transition in the EE[19] environment in Indiana, this Short Term Implementation plan will include a summary of the historical performance of the EE Programs currently offered by Duke Energy Indiana and a projection of the performance of future EE programs that are currently pending final approval and implementation.

[19] In the past, all programs that affected customer load shapes were classified as demand-side management or DSM programs. The term energy efficiency as used in this plan refers to both demand response and conservation programs. This replaces the term demand-side management (DSM) previously used.

For 2012 and beyond, Duke Energy Indiana's Energy Efficiency (EE) program portfolio reflects the expected implementation of the Core Programs offered by the statewide Third Party Administrator and the Core Plus Programs offered by Duke Energy Indiana.

Duke Energy Indiana estimates that it will spend approximately $42.5 million dollars in 2012 implementing the Core and Core Plus EE Programs along with the Demand Response and Special Contracts Programs. An estimate of the 2012 and 2013 charges for each of the EE programs in the Core and Core Plus portfolios and the Demand Response and Special Contracts Programs is provided in a Table STIP-1 located at the end of this STIP.

EE PROGRAMS HISTORICALLY OFFERED BY DUKE ENERGY INDIANA:

Duke Energy Indiana has a long history associated with the implementation of energy efficiency programs. Duke Energy Indiana's energy efficiency programs are designed to help reduce demand on the Duke Energy Indiana system during times of peak load and reduce energy consumption during peak and off-peak hours. The programs fall into two categories: traditional conservation programs and demand response programs. Demand response programs contain customer-specific contract curtailment options, the Power Manager (residential direct load control) program, and the PowerShare® program (for non-residential customers). Implementing cost-effective conservation and demand response programs helps reduce overall long-term supply costs. Duke Energy Indiana's energy efficiency programs are primarily selected for implementation based upon their appeal to Duke Energy Indiana customers and cost-effectiveness; however, there may be programs, such as a low income program, that are chosen for implementation due to desirability from an educational and/or societal perspective.

Since 1991, Duke Energy Indiana has offered a variety of energy efficiency programs that create significant savings to customers. These programs have been approved over the last several years through a variety of Commission Orders and will continue to be offered until replaced in the near future by programs as mandated by the Commission and as requested by Duke Energy Indiana.

The following programs are currently offered by Duke Energy Indiana:

Residential Lighting

Program Description:

On November 30, 2010 the Commission approved a Residential Lighting Program to be offered by Duke Energy Indiana. Under this program, approximately 120,000 Duke Energy Indiana customers received coupons at their mailing address that could be redeemed for free CFL light bulbs at certain retail stores. In 2011 the Commission granted approval under Cause No. 40008 to change this program slightly to allow a business reply card to be sent to customers at their mailing address and they can return the card to have the free CFL light bulbs sent directly to their home. Deployment of the business reply cards began in late July 2011 and was expected to be completed at the end of October.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 0.6 MW of peak capacity reduction and 6,300 MWh of energy savings. Total expenditures during 2010 were approximately $500,000.

Low Income Weatherization

Program Description:

This program leverages state weatherization programs to fund direct installation of weatherization and energy-efficiency measures by the Indiana Community Action Agency (INCAA) and the Indiana Family and Social Services Administration (FSSA). It also provides education to income-qualified customers about energy usage and opportunities to reduce energy consumption.

As part of the Low Income program, Duke Energy Indiana, with assistance from INCAA and FSSA, works to replace inefficient refrigerators.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 9.7 MW of peak capacity reduction and 56,000 MWh of energy savings. Total expenditures during 2010 were approximately $615,500.

Energy Efficient Schools

Program Description:

The mission of the National Energy Education Development (NEED) program is to promote an energy-conscious and educated society by creating effective networks of students, educators, and business, government, and community leaders to design and deliver objective, multi-sided energy education programs. The goal is to provide the next generation with the knowledge, leadership training, and critical thinking skills necessary to enable it to make responsible energy decisions.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 0.35 MW of peak capacity reduction and 1,150 MWh of energy savings. Total expenditures during 2010 were approximately $56,000.

Home Energy Audit

Program Description:

This is an audit program available to all Duke Energy Indiana residential customers with electric water heat and/or electric heat. The program consists of a walk-through energy audit, including an inspection of mechanical systems and the home's thermal envelope, development and delivery of an on-site computer-generated audit report, and detailed review of the report and recommendations.

When a Home Energy House Call is requested by a customer, a qualified home energy specialist visits the site to gather information about the home. The specialist checks the home for air leaks, inspects the furnace filter, and looks at the insulation levels in different areas. A questionnaire about the energy usage is also completed. Based on the results of the questionnaire and audit, the specialist describes and recommends cost-saving actions to make the home more energy efficient. Upon completion of the audit, contents of an Energy Efficiency Kit, which includes three compact fluorescent light bulbs, a deluxe low-flow showerhead, one kitchen and one other faucet aerator, outlet gaskets, and a motion sensor low voltage night light are installed at no cost to the customer. Additional low-cost conservation items can be purchased by the participant by visiting the Duke Energy website. Specific energy conservation measures are described and prioritized as action items based on energy savings and costs in the On-Site customized audit report.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 5.4 MW of peak capacity reduction and 18,700 MWh of energy savings. Total expenditures during 2010 were approximately $500,000.

Smart $aver® and Energy Star® New Home Construction

Program Description:

The Smart $aver® program promotes the installation of high-efficiency heat pumps (including geothermal heat pumps) and air conditioners in existing single-family homes. Incentives are available for HVAC systems that meet minimum Seasonal Energy Efficiency Rating (SEER) levels and include a variable speed fan motor on the indoor furnace.

Incentives for new homes are found in Duke Energy Indiana's Energy Star® New Construction program. This program offers an incentive to builders for new homes that use a heat pump and pass the Energy Star® inspection. New Energy Star® homes that do not use a heat pump are typically heated with natural gas and usually participate in rebate programs from natural gas suppliers in Indiana. Builders have the option to pass the incentive to the homeowner on a case by case basis.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 38.2 MW of peak capacity reduction and 59,000 MWh of energy savings. Total expenditures during 2010 were approximately $2.2 million.

Small Commercial and Industrial

Program Description:

This program targets commercial and industrial customers with annual peak electric demand of 500 kW or less. The program provides incentives to encourage the installation of prescribed high-efficiency measures – lighting, air conditioners, motors and pumps.

Historical Performance:

Since inception of this program through the end of 2010, this program had contributed approximately 82 MW of peak capacity reduction and 343,000 MWh of energy savings. Total expenditures during 2010 were approximately $389,000.

Direct Load Control System

Program Description:

Power Manager® is a direct load control program whereby Duke Energy Indiana cycles residential air conditioners off and on during system peak load and/or high price periods to obtain a reduction in system load. Duke Energy Indiana pays incentives to customers for the option to control the use of their air conditioner.

Implementation Strategy:

Duke Energy Indiana contracts with GoodCents Solutions to process customer enrollments and provide switch services for the program from installation to removal. The installed inventory of switches currently consists of Corporate Systems Engineering and Cooper Power Systems/Cannon Technology switches. All newly installed devices are purchased from Cannon Technologies. Duke Energy Indiana uses direct mail as its primary marketing tool for the program. Other channels are also used, Duke Energy

Power Manager® web site signup, media promotions (TV, press) and cross promotion by Duke Energy Midwest's other EE programs.

The Program Manager, as well as Duke Energy Midwest contractors, conducts periodic visits to installation sites to ensure contract compliance and quality. In addition, program management monitors customer calls to ensure customer satisfaction.

During the summer of 2011, Duke Energy Indiana continued collecting data for assessment of Power Manager® in much the same way as is described in the previous Power Manager® Impact Evaluation Reports. However, Cannon switches are now used in place of data loggers since they have the basic data logger functionality built in. A research sample of 71 customer sites is used to measure AC unit duty cycles. This research sample has Cannon switches installed on the outdoor compressor units and standard household meters were replaced with interval meters that measure 15-minute kWh usage. There were 33 holdovers from the 2010 and 2009 sample, and 38 new recruits.

Also during summer 2011, Duke Energy Indiana is conducting an operability study to measure the performance of Power Manager® load control devices installed in Indiana. The operability study includes 150 customer sites in Indiana. An initial collection of register data from load control devices at these sites has been completed, and a second data collection will occur at the end of the Power Manager® control season. The change in certain key registers between these data collections has been analyzed to provide a statistically valid assessment of the performance of Power Manager® load control devices during summer 2011.

<u>Program Update:</u>

During the time period of July 1, 2010 through June 30, 2011 Duke Energy Indiana enrolled a total of 5,878 customers in the Power Manager® Program. As of June 2011, a total of 51,015 switches were available for load control representing 43 MW of capability.

Duke Energy Indiana activated the program 7 times in May through September of 2011 due to hot weather and high market prices for power. Estimated average value for actual curtailments during the 2010 events across all fully operational hours was 34 MW. The highest one-hour load reduction among all event hours was 42 MW. Actual curtailment estimates for 2011 will not be available until later this year.

New strategies implemented in 2011 included:

- Through June 2011, there are 3,311 fewer Corporate Systems Engineering (CSE) devices in service as a result of :
    - being replaced with Cannon devices consistent with Duke Energy Indiana's decision to replace all CSE devices over the next 4 years.
    - customer removal from Power Manager.

<u>PowerShare®</u>

<u>Program Description:</u>

Several Duke Energy Indiana non-residential demand response programs are branded under the name PowerShare®. PowerShare® programs are offered under Duke Energy Indiana's Standard Contract Rider No. 23 entitled "Peak Load Management" or PLM (*i.e.* CallOption and QuoteOption) and under Standard Contract Rider No. 22 entitled "Market Based Demand Response" or MBDR (*i.e.*, EDR and DRR Type I Energy Only).

Programs under Rider PLM were implemented in January 2000, following in the footsteps of a 1990s predecessor program known as Energy Call Options Program. The PowerShare® program provides financial incentives in the form of bill credits to our commercial and industrial customers to reduce electric demand during Duke Energy Indiana's peak load times. Customers may choose to participate in either CallOption or QuoteOption.

CallOption requires customers to commit to a pre-selected load reduction, based on historic or usual demand, at a selected strike price. In return for this commitment to reduce load when called upon by the Company, CallOption customers receive a monthly premium payment from Duke Energy Indiana as a credit to their bill. In addition, when customers are called to reduce load, they receive an energy credit. Our standard CallOption products may be exercised by Duke Energy Indiana based on economics and/or reliability concerns. For economic related events, when the next day's market prices are projected to be greater than the strike price, Duke Energy Indiana can call the option by notifying customers by 3:30 PM (EST) the day ahead. For reliability, Duke Energy Indiana can call the option by notifying customers at least 6 hours ahead of an event. Reliability events would typically be initiated by MISO. The level of incentive received by the customer depends upon the customer- selected parameters: the contracted for option load, the strike price, the selected duration (number of hours), and the maximum number of calls. The term of the CallOption program varies depending on the option selected. There are four options for customers to choose:

- CallOption 0/5 incorporates 0 economic based events and 5 reliability based events with a term of June through May.
- CallOption 5/5 incorporates 5 economic based events and 5 reliability based events with a term of June through September.
- CallOption 10/5 incorporates 10 economic based events and 5 reliability based events with a term of June through September.
- CallOption 15/5 incorporates 15 economic based events and 5 reliability based events with a term of June through May.

Each option has "built-in" limitations on how frequently economic events can be invoked during the time period.

QuoteOption allows a customer to elect whether or not to reduce its load when called upon by Duke Energy Indiana when prices reach high levels. No monthly premium is paid to QuoteOption customers because they may elect not to respond when called, but an energy credit is paid for load reductions made in response to Duke Energy Indiana's calls. Because customers have the right to elect whether or not to respond to a call, QuoteOption essentially offers customers a no-risk proposition. This election feature does give Duke Energy Indiana less control over, and certainty of, load reductions; however, it also provides us with load reductions from a group of customers that would not participate if they had to contractually commit to load reductions. The QuoteOption is available year-around, in accordance with the Commission's Order in Cause No. 42870. It is not incorporated into the IRP analysis.

Programs under Rider MBDR were approved in early 2011. During Cause No. 43566 proceedings, Indiana customer groups, Duke Energy Indiana, other interested parties, and the IURC all expressed interest in having Indiana utilities offer additional demand response programs to customers consistent with MISO demand response constructs. Subsequent to the order in that Cause and the additional guidance provided during the ensuing technical conference, Duke Energy Indiana filed tariffs for and received approval for the following new demand response programs:

- PowerShare® EDR Program
- PowerShare® DRR Type I Energy Only Program

These programs differ in two significant ways from the PowerShare CallOption program. First, they are energy only programs (*i.e.*, do not meet requirements for use as capacity resources) and second, they are market-ased programs. In this respect, "market-based" is referring to the issue of cost effectiveness. These new programs are not based on the concept of avoiding costs of building a new peaking generation unit. The benefits and incentives for these programs are driven through market participation. The benefits and incentives to participants will be sourced from market participation. These programs currently have no participants and they are not incorporated into the IRP analysis.

Implementation Strategy

The goal going forward is to maintain the flexibility and options that the PowerShare® programs provide. The main emphasis and challenge will be retaining the existing PowerShare® base and continuing to add new customers cost effectively. The enrollment process is handled on-line through the PowerShare® web site. The CallOption product incentives are based on the avoided-cost methodology as opposed to a market-based approach. Duke Energy Indiana offers customers an interface tool called Energy Profiler Online, providing historical usage information. Through this service offering, customers become more informed consumers of electricity and have a better understanding of how to control energy usage.

For summer 2011, the Company signed 179 MW of expected load reduction through CallOption. Duke Energy Indiana has been successful in retaining its PowerShare CallOption customer base. In 2011, Duke Energy Indiana had 83 CallOption customers and 21 QuoteOption customers. This compares to 67 CallOption customers and 48 QuoteOption customers in 2010. The program was utilized 4 times for CallOption in 2010.

PROPOSED PROGRAMS:

Duke Energy Indiana intends to continue to be a leader in energy efficiency by offering programs through a combination of programs to be offered by a Third Party Administrator (Core Programs) and programs offered by Duke Energy Indiana (Core Plus Programs). The Core Plus programs have been submitted for approval under Cause 43955 and Duke is currently awaiting approval of this portfolio of energy efficiency measures.

General Objective

Through a combination of the Core and Core Plus programs, Duke Energy Indiana expects to reduce energy and demand on the Duke Energy Indiana system through the implementation of a broader set of new energy efficiency programs. These programs will be available for both residential and non-residential customers and include both conservation and demand response programs. Demand response programs contain customer-specific contract curtailment options, the Power Manager (residential direct load control) program, and the PowerShare® program (for non-residential customers).

Criteria for Measuring Progress

Evaluation, Measurement, and Verification (EM&V) studies will be undertaken to measure the impacts achieved from the implementation of the proposed programs. For the Core Programs, EM&V will be conducted by the statewide evaluator and for the Core Plus Programs, the EM&V will be conducted by an independent contractor employed by Duke Energy Indiana. The timetable for implementation of the programs and the EM&V analyses will depend upon the timing of the deployment of the Core Programs by the Third Party Administrator and the timing of the Commission's approval of the Core Plus Programs proposed by Duke Energy Indiana.

Program Descriptions:

As defined in the Commission's Order in Cause No. 42693 (Phase II) (Phase II Order), all Duke Energy Indiana customers will be eligible to participate in Core Program offerings through a Third Party Administrator. Core programs include:

- Residential Lighting Program: Incentives for ENERGY STAR® qualified lighting measures;
- Home Energy Audit Program: Walk-through audits and direct installation of low-cost energy saving measures;
- Low Income Weatherization Program: Comprehensive energy efficiency retrofits for income-qualified households;
- Energy Efficient Schools Program: Information and energy efficiency kits for K-12 schools, school building energy audits and access to prescriptive incentives available for commercial customers;
- Commercial and Industrial Program: Prescriptive incentives for common technologies such as T-8 or T-5 lighting, high efficiency motors and pumps and HVAC equipment.

An overview of the Core Plus programs to be offered by Duke Energy Indiana after receipt of an Order under Cause No. 43955 is shown below. The details of each program are shown in Chapter 4, Section E.

Residential Programs – Core Plus

- Online Home Energy Calculator: This online program will assist residential customers in assessing their energy usage and will provide recommendations for more efficient use of energy in their homes.

- Personalized Energy Report (PER)™: This paper-based assessment will assist residential customers in assessing their energy usage and will provide recommendations for more efficient use of energy in their homes.

- Smart $aver® for Residential Customers: The Smart $aver® Program will provide incentives to customers, builders, and heating contractors (HVAC dealers) to promote and install high-efficiency air conditioners and heat pumps with electronically commutated fan motors (ECM).

- Agency CFLs – Low Income Services (Agency Assistance Portal & CFLs): The purpose of this program is to assist low-income residential customers with energy efficiency measures to reduce energy usage by providing free CFLs to income-qualified customers.

- Refrigerator and Freezer Recycling: The purpose of this program is to encourage Duke Energy Indiana customers to responsibly dispose of inefficient, but still operating, refrigerators and freezers.

- Property Manager CFL: Duke Energy Indiana coordinates with Property Managers to bring energy efficiency to their multi-unit residential facilities by providing bulk quantities of CFLs to be installed in individual units.

- Tune and Seal: Duke Energy Indiana will coordinate with trade allies (HVAC and insulation) to provide energy efficiency services to homeowners in the Duke Energy Indiana service territory.

- Home Energy Comparison Report: Monthly energy usage reports are delivered (email, web or mail) to targeted customers in the Duke Energy Indiana service territory.

- Power Manager®: Power Manager® is a residential load control program. The purpose of the Power Manager® program is to reduce demand by controlling residential air conditioning usage during peak demand and high wholesale price conditions, as well as generation emergency conditions during the summer months.

Non-Residential Programs – Core Plus

- Smart $aver® for Non-Residential Customers: The purpose of this program is to encourage the installation of high-efficiency, ENERGY STAR® certified, where applicable, equipment in new and existing non-residential establishments.

- Prescriptive Incentive Program : Includes incentives for equipment that supplement the measures offered through the statewide Core Program. The following types of equipment will be eligible for incentives: high-efficiency lighting, high-efficiency HVAC equipment, high-efficiency motors, high efficiency pumps, variable frequency drives, chillers, thermal storage, process equipment, and foodservice equipment.

- Custom Incentive Program: Include incentives for equipment and systems that are not covered by the Prescriptive Incentive or statewide Core Programs. Examples of such systems and equipment include, but are not limited to, large scale applications and for which unique, case-by-case analysis is otherwise required, packaged projects (*i.e.,* whole building design), enhanced building envelopes, as well as high efficiency lighting, HVAC, motors, pumps, variable frequency drives, chillers, thermal storage, process and foodservice equipment / technology that are not covered within the Prescriptive Incentive and Core Programs.

- Non-Residential Energy Assessments: The purpose of this program is to assist non-residential customers in assessing their energy usage and providing recommendations for more efficient use of energy.

  The types of available energy assessments are as follows:
  - ***Online Analysis***. The customer provides information about its facility by answering a series of online questions.
  - ***Telephone Interview Analysis***. The customer provides information to Duke Energy Indiana through a telephone interview after which billing data, and if available, load profile data, will be analyzed.
  - ***On-site Audit and Analysis***. Duke Energy Indiana will provide, consistent with the customer's desired level of investment and detail, an energy analysis report. The report will include an efficiency assessment and recommendations for efficiency improvements, tailored to the customer's facility and operation.

- PowerShare® CallOption: PowerShare® CallOption is a non-residential demand response program. The program has components for customers to respond with load curtailment for both emergency and economic conditions and is marketed under the name PowerShare® CallOption.

- Special Curtailment Contracts: Duke Energy Indiana has contracted with several of its industrial customers to reduce their demand for electricity during times of peak system demand. Currently, two contracts are in effect. These contracts allow Duke Energy Indiana to provide "as available" or "non-firm" service to those customers.

4. Transmission and Distribution

The transmission and distribution information is located in Appendix G of this report.

Table E-1 Projected Program Expenditures (STIP-1)

TABLE STIP - 1		
	Projected Program Expenditures	
Core Programs	**2012**	**2013**
Residential Lighting	$ 1,633,806	$ 2,030,367
Home Energy Audit	$ 3,018,757	$ 2,884,084
Low Income Weatherization	$ 1,395,019	$ 1,716,635
Energy Efficient Schools	$ 3,176,086	$ 3,364,329
Comercial and Industrial	$ 12,393,810	$ 16,389,010
Total Core	**$ 21,617,478**	**$ 26,384,425**
Core Plus Programs	**2012**	**2013**
Online Home Energy Calculator	$ 18,521	$ -
Personalized Energy Report	$ 1,032,672	$ 145,597
Smart Saver Residential	$ 1,702,913	$ 1,876,154
Agency CFLs	$ 89,882	$ -
Refrigerator and Freezer Recycling	$ 954,380	$ 1,209,049
Property Manager CFL	$ 143,811	$ 51,770
Tune and Seal	$ 5,908,270	$ 5,922,969
Home Energy Comparison Report	$ 190,658	$ 234,820
Power Manager	$ 2,272,298	$ 2,256,743
Smart Saver Non-Residential	$ 3,293,779	$ 5,076,288
Non-Residential Energy Assessments[1]	N/A	N/A
Power Share Call Option	$ 5,313,302	$ 5,350,580
Total Core Plus	**$ 20,920,486**	**$ 22,123,970**
Total EE/DR Programs	**$ 42,537,964**	**$ 48,508,395**

1 - Costs associated with Non-Residential Energy Assessments are included within the Smart Saver Non-Residential programs

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Duke Energy

Indiana

The Duke Energy Indiana 2011 Integrated Resource Plan

November 1, 2011

Appendix F: Standardized Templates

APPENDIX F – Table of Contents

Table F-1
Supply vs Demand Balance

DUKE ENERGY INDIANA
SUPPLY VS. DEMAND BALANCE
(Summer Capacity and Loads)

YEAR	Owned Capacity[a] (MW)	Incremental Purchases (MW)	Incremental Capacity Additions (MW)	Incremental Capacity Retirements/ Derates[b] (MW)	Incremental Behind The Meter Generation (MW)	Total Capacity (MW)	Peak Load[c] (MW)	PEV Load[d] (MW)	Peak Load With PEV[d] (MW)	Conservation[d] (MW)	Demand Response (MW)	Net Load (MW)	Reserve Margin (%)	NOTES
2011	7236	10	0	-176	18	7088	6605	0	6605	-13	-419	6173	14.8	Edw 6-8, Miami Wabash CT 6 Retired
2012	7088	0	353	-280	0	7161	6700	0	6701	-37	-409	6254	14.5	Vermilion; Gallagher 1,3 Retired
2013	7161	0	586	0	0	7747	6840	0	6841	-69	-423	6349	22.0	Edwardsport IGCC
2014	7747	0	0	0	0	7747	6925	1	6926	-104	-436	6386	21.3	
2015	7747	0	325	-978	0	7094	6679	2	6681	-140	-448	6094	16.4	New Comb. Cycle; Wab River 2-6 Retired
2016	7094	0	12	0	0	7106	6852	3	6855	-182	-452	6221	14.2	Wind; Biomass
2017	7106	0	197	-6	0	7297	6931	4	6935	-232	-452	6251	16.7	New CT; Wind; Biomass
2018	7297	0	12	0	0	7309	7018	6	7024	-287	-452	6284	16.3	Wind; Biomass
2019	7309	0	30	0	0	7340	7126	8	7134	-345	-452	6337	15.8	Wind; Biomass
2020	7340	0	40	0	0	7380	7152	11	7163	-345	-452	6366	15.9	Wind; Solar; Biomass
2021	7380	0	211	-166	0	7425	7238	12	7251	-350	-452	6449	15.1	New CT; Wind; Solar; Biomass
2022	7425	0	207	0	0	7632	7349	14	7363	-354	-452	6557	16.4	New CT; Wind; Solar; Biomass
2023	7632	0	25	0	0	7658	7421	16	7437	-359	-452	6626	15.6	Wind; Solar; Biomass
2024	7658	0	12	0	0	7670	7516	17	7534	-363	-452	6718	14.2	Wind; Biomass
2025	7670	0	204	0	0	7874	7578	19	7597	-368	-452	6777	16.2	New CT; Wind; Solar; Biomass
2026	7874	0	10	0	0	7884	7631	21	7652	-373	-452	6827	15.5	Wind
2027	7884	0	13	0	0	7897	7723	23	7745	-377	-452	6916	14.2	Wind; Solar
2028	7897	-10	328	0	0	8216	7750	102	7852	-358	-452	7041	16.7	New Comb. Cycle; Solar
2029	8216	0	20	0	0	8235	7829	110	7938	-364	-452	7122	15.6	Wind; Solar
2030	8235	0	70	0	0	8305	7940	117	8057	-369	-452	7235	14.8	
2031	8305	0	13	0	0	8318	7986	125	8111	-373	-452	7286	14.2	Wind; Solar

Notes:

[a] Including Gibson 5 capacity owned by IMPA and WVPA through 12/31/14
20MW derate to serve steam to Premier Boxboard has been deducted

[b] Reflects expiration of Gibson 5 back-up to IMPA and WVPA 12/31/14

[c] Including IMPA and WVPA peak load requirements corresponding to their Gibson 5 ownership through 12/31/14

[d] Not already included in load forecast. This value is coincident with the net peak load, so it may not be the peak value for the year.

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Table F-2
Peak and Energy Forecast

Duke Energy Indiana 2011 IRP
Peak and Energy Forecast

	Summer Peak (MW)	Winter Peak (MW)	Annual Peak (MW)	Annual Energy (MWh)	Load Factor (%)
2011	6,592	5988	6,592	36,963,514	60.59%
2012	6,663	5993	6,663	37,237,147	57.58%
2013	6,772	6017	6,772	37,591,889	69.93%
2014	6,822	5889	6,822	37,827,392	67.83%
2015	6,541	5682	6,541	35,282,336	66.66%
2016	6,673	5924	6,673	35,732,595	64.01%
2017	6,703	5819	6,703	35,788,058	63.62%
2018	6,737	5893	6,737	35,806,644	63.37%
2019	6,789	5956	6,789	35,816,130	63.30%
2020	6,818	5861	6,818	36,244,562	61.57%
2021	6,901	6046	6,901	36,669,899	60.96%
2022	7,009	6181	7,009	37,077,457	60.95%
2023	7,078	6110	7,078	37,498,191	60.68%
2024	7,171	6233	7,171	37,921,940	60.22%
2025	7,229	6277	7,229	38,361,631	60.52%
2026	7,280	6200	7,280	38,794,640	60.66%
2027	7,368	6385	7,368	39,238,039	60.39%
2028	7,494	6397	7,494	39,687,228	60.48%
2029	7,574	6512	7,574	40,141,490	60.20%
2030	7,688	6589	7,688	40,602,893	60.58%
2031	7,738	6639	7,738	41,076,930	60.83%
Compound Average Growth Rate	0.77%	0.49%	0.77%	0.50%	

Table F-3: Duke Energy Indiana
Summary of Existing Electric Generating Facilities

Plant Name	Unit Number	City or County	State	In-Service Year	Unit Type	Primary Fuel	Secondary Fuel (if any)	Ownership %	Winter Rating (MW)	Summer Rating (MW)	Environmental Controls	Notes
Cayuga	1	Cayuga	IN	1970	ST	Coal		100.00%	505.0	500.0	FGD, EP, LNB, OFA, CT	
Cayuga	2	Cayuga	IN	1972	ST	Coal		100.00%	500.0	495.0	FGD, EP, LNB, OFA, CT	
Cayuga	3A	Cayuga	IN	1972	IC	Oil		100.00%	3.0	3.0	None	
Cayuga	3B	Cayuga	IN	1972	IC	Oil		100.00%	3.0	3.0	None	
Cayuga	3C	Cayuga	IN	1972	IC	Oil		100.00%	2.0	2.0	None	
Cayuga	3D	Cayuga	IN	1972	IC	Oil		100.00%	2.0	2.0	None	
Cayuga	4	Cayuga	IN	1993	CT	Gas	Oil	100.00%	120.0	99.0	WI	
Connersville	1	Connersville	IN	1972	CT	Oil		100.00%	49.0	43.0	None	
Connersville	2	Connersville	IN	1972	CT	Oil		100.00%	49.0	43.0	None	
Gallagher	1	New Albany	IN	1959	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA	
Gallagher	2	New Albany	IN	1958	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA, DSI	DSI required by Consent Decree
Gallagher	3	New Albany	IN	1960	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA	
Gallagher	4	New Albany	IN	1961	ST	Coal		100.00%	140.0	140.0	BH, LNB, OFA, DSI	DSI required by Consent Decree
Gibson	1	Owensville	IN	1976	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	2	Owensville	IN	1975	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	3	Owensville	IN	1978	ST	Coal		100.00%	635.0	630.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	4	Owensville	IN	1979	ST	Coal		100.00%	627.0	622.0	FGD, SCR, SBS, EP, LNB, OFA, CL	
Gibson	5	Owensville	IN	1982	ST	Coal		50.05%	312.8	310.3	FGD, SCR, SBS, EP, LNB, OFA, CL	Commonly owned with WVPA (25%) and IMPA (24.95%)
Henry County	1	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Henry County	2	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Henry County	3	Henry County	IN	2001	CT	Gas		100.00%	43.0	43.0	None	50 MW from the plant is supplied to load other than DEI under PPA
Madison	1	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	2	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	3	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	4	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	5	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	6	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	7	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Madison	8	Butler County	OH	2000	CT	Gas		100.00%	88.0	72.0	None	
Markland	1	Florence	IN	1967	HY	Water		100.00%	17.6	17.6	None	
Markland	2	Florence	IN	1967	HY	Water		100.00%	16.1	16.1	None	
Markland	3	Florence	IN	1967	HY	Water		100.00%	18.0	18.0	None	

Table F-3: Duke Energy Indiana
Summary of Existing Electric Generating Facilities

Plant Name	Unit Number	City or County	State	In-Service Year	Unit Type	Primary Fuel	Secondary Fuel (if any)	Ownership %	Winter Rating (MW)	Summer Rating (MW)	Environmental Controls	Notes
Miami-Wabash	1	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	2	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	3	Wabash	IN	1968	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	5	Wabash	IN	1969	CT	Oil		100.00%	17.0	16.0	None	
Miami-Wabash	6	Wabash	IN	1969	CT	Oil		100.00%	17.0	16.0	None	
Noblesville	1	Noblesville	IN	1950	CC	Gas		100.00%	46.0	46.0	CT	Units 1 & 2 were repowered as Gas CC in 2003
Noblesville	2	Noblesville	IN	1950	CC	Gas		100.00%	46.0	46.0	CT	Units 1 & 2 were repowered as Gas CC in 2003
Noblesville	3	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Noblesville	4	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Noblesville	5	Noblesville	IN	2003	CC	Gas		100.00%	72.7	64.4	LNB, SCR, CO	CT and share of HRSG capacity combined
Wabash River	2	West Terre Haute	IN	1953	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	3	West Terre Haute	IN	1954	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	4	West Terre Haute	IN	1955	ST	Coal		100.00%	85.0	85.0	EP, LNB, OFA	
Wabash River	5	West Terre Haute	IN	1956	ST	Coal		100.00%	95.0	95.0	EP, LNB, OFA	
Wabash River	6	West Terre Haute	IN	1968	ST	Coal		100.00%	318.0	318.0	EP, LNB, OFA	
Wabash River	7A	West Terre Haute	IN	1967	IC	Oil		100.00%	3.1	3.1	None	
Wabash River	7B	West Terre Haute	IN	1967	IC	Oil		100.00%	3.1	3.1	None	
Wabash River	7C	West Terre Haute	IN	1967	IC	Oil		100.00%	2.1	2.1	None	
Wheatland	1	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	2	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	3	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Wheatland	4	Knox County	IN	2000	CT	Gas		100.00%	122.0	115.0	WI	
Total									7,081.9	6,830.3		

Unit Type

ST	Steam
CT	Simple Cycle Combustion Turbine
CC	Combined Cycle Combustion Turbine
IC	Internal Combustion
HY	Hydro

Fuel Type

Coal
Gas
Syngas
Oil
Diesel
Water

Environmental Controls

FGD	SO2 Scrubber
SCR	Selective Catalytic Reduction
SBS	Sodium Bisulfite / Soda Ash Injection System
LNB	Low NO_x Burner
EP	Electrostatic Precipitator
BH	Baghouse
CT	Cooling Tower
CL	Cooling Lake
WI	Water Injection (NO_x)
SI	Steam Injection (NO_x)
OFA	Overfire Air
CO	Passive Carbon Monoxide Catalyst
DSI	Dry Sorbent Injection

Table F-4
Duke Energy Indiana
Summary of Existing Electric Generating Facilities by Plant

	Winter (MW)	Summer (MW)
Cayuga	**1135**	1104
Connersville	**98**	86
Gallagher	**560**	560
Gibson	**2844.8**	2822.3
Henry County	**129**	129
Madison	**704**	576
Markland	**51.7**	51.7
Miami-Wabash	**85**	80
Noblesville	**310.1**	285.0
Wabash River	**676.3**	676.3
Wheatland	**488**	460
Grand Total	**7081.9**	**6830.3**

Table F-5
Duke Energy Indiana
Summary of Existing Electric Generating Facilities by Fuel

	Winter (MW)	Summer (MW)	Winter % of Total Capacity	Summer % of Total Capacity
Coal	**5,077.8**	**5,045.3**	**71.7%**	**73.9%**
Cayuga	1,005.0	995.0		
Gallagher	560.0	560.0		
Gibson	2,844.8	2,822.3		
Wabash River	668.0	668.0		
Gas	**1,751.1**	**1,549.0**	**24.7%**	**22.7%**
Cayuga	120.0	99.0		
Henry County	129.0	129.0		
Madison	704.0	576.0		
Noblesville	310.1	285.0		
Wheatland	488.0	460.0		
Oil	**201.3**	**184.3**	**2.9%**	**2.7%**
Cayuga	10.0	10.0		
Connersville	98.0	86.0		
Miami-Wabash	85.0	80.0		
Wabash River	8.3	8.3		
Water	**51.7**	**51.7**	**0.7%**	**0.8%**
Markland	51.7	51.7		
Grand Total	**7,081.9**	**6,830.3**		

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Indiana

The Duke Energy Indiana 2011 Integrated Resource Plan

November 1, 2011

Appendix G: Transmission Planning and Forecast

PREFACE

Throughout this report, PSI Energy, Inc. d/b/a/ Duke Energy Indiana, Inc. will be referred to as Duke Indiana, The Cincinnati Gas & Electric Company d/b/a/ Duke Energy Ohio, Inc. will be referred to as Duke Ohio, and The Union Light, Heat and Power Company d/b/a/ Duke Energy Kentucky, Inc. will be referred to as Duke Kentucky, unless the specific context requires that the former names be used. References to the combined transmission systems of Duke Indiana and Duke Ohio will be labeled as Duke Midwest. In addition, the Figures associated with each chapter or section of the appendix are located at the end of that chapter or section of the appendix for convenience.

APPENDIX G - Table of Contents

1. TRANSMISSION EXECUTIVE SUMMARY

A. System Description

The Duke Midwest transmission system is comprised of the 345 kilovolt (kV), and 138 kV systems of Duke Ohio and the 345 kV, 230 kV, and 138 kV systems of Duke Indiana. The transmission system serves primarily to deliver bulk power into and/or across Duke Midwest's service area. This bulk power is distributed to numerous substations that supply lower voltage sub-transmission systems, distribution circuits, or directly serve large customer loads. Because of the numerous interconnections Duke Midwest has with neighboring transmission systems, the Duke Midwest transmission system increases electric system reliability and decreases costs to customer by permitting the exchange of power and energy with other utilities on an emergency or economic basis.

As of December 2010, Duke Indiana's wholly and jointly owned share of transmission included approximately 745 circuit miles of 345 kV lines, 648 circuit miles of 230 kV lines and 1423 circuit miles of 138 kV lines. Duke Indiana, Indiana Municipal Power Agency (IMPA), and Wabash Valley Power Association (WVPA) own the Joint Transmission System (JTS) in Indiana. The three co-owners have rights to use the JTS. Duke Indiana is directly interconnected with seven other transmission systems (American Electric Power, Louisville Gas and Electric Energy, Ameren, Hoosier Energy, Indianapolis Power and Light, Northern Indiana Public Service Company, Vectren) as well as Duke Ohio.

Portions of the Duke Ohio 345 kV transmission system are jointly owned with Columbus Southern Power (CSP) and/or Dayton Power & Light (DP&L). As of December 2010, the transmission system of Duke Ohio and its subsidiary companies consisted of approximately 403 circuit miles of 345 kV lines (including Duke Ohio's share of jointly-owned transmission) and 725 circuit miles of 138 kV lines. Duke Ohio is directly connected to five transmission systems (American Electric Power, Dayton Power and

Light, East Kentucky Power Cooperative, Louisville Gas and Electric Energy, Ohio Valley Electric Cooperative) as well as Duke Indiana.

B. Electric Transmission Forecast

The Duke Midwest transmission system is planned as a single, integrated system. As a member of the Midwest ISO (MISO), Duke Midwest participates in the MISO planning processes, and is subject to the overview and coordination mechanisms of the MISO. Additional coordination occurs through a variety of mechanisms, including Reliability*First* Corporation (RFC) and joint meetings with the other entities held as necessary. Effective January 1, 2012, the transmission system of Duke Ohio will transition to the PJM Interconnection, LLC (PJM).

2. ELECTRIC TRANSMISSION FORECAST

A. General Description

The Duke Midwest transmission system is comprised of 138 kV, 230 kV, and 345 kV systems. The 345 kV system generally serves to distribute power from Duke Midwest's large generating units on the system, and to interconnect the Duke Midwest system with other systems. These interconnections enable the transmission of power between systems from jointly owned generating units and they provide capacity for economy and emergency power transfers. The 345 kV system is connected to the 138 kV and 230 kV systems through large transformers at a number of substations across the system. These 138 kV and 230 kV systems generally distribute power received through the transformers and also from several smaller generating units, which are connected directly at these voltage levels. This power is distributed to substations, which supply lower voltage sub-transmission systems, distribution circuits, or serve a number of large customer loads directly.

B. Transmission and Distribution Planning Process

Transmission and distribution planning is a complex process which requires the evaluation of numerous factors to provide meaningful insights into the performance of the system. Duke Midwest's distribution system planners gather information concerning actual distribution substation transformer and line loadings. The loading trend for each transformer is examined, and a projection of future transformer bank loading is made based on the historic load growth combined with the distribution planners' knowledge of load additions within the area. The load growth in a distribution planning area tends to be somewhat more uncertain and difficult to predict than the load forecasts made for Duke Midwest as a whole.

Customers' decisions can dramatically impact not only the location of future capacity, but also the timing of system improvement projects. Because of this uncertainty, distribution development plans must be under continual review to make sure the proposed specific projects remain appropriate for the area's needs.

Transmission and distribution (T&D) planning generally depends on the specific location of the loads, therefore the effects of co-generation capacity on T&D planning is location-specific. To the extent that fewer new T&D resources are required to serve these customers or the local areas in which they reside, Duke Midwest's T&D planning will reflect this change.

It typically takes 18 to 24 months to add new distribution substation capacity to an area. Factors closely related to the future customer's load, such as local knowledge of growth potential based upon zoning, highway access and surrounding development can help forecast ultimate distribution system needs.

The transmission system planners utilize the historical distribution substation transformer bank loading and trends, combined with the Duke Midwest load forecast and resource plan and firm service schedules, to develop models of the transmission system. These models are utilized to simulate the performance of the transmission system under a wide variety of credible conditions to ensure that the expected performance of the transmission system meets both RFC and Duke Midwest planning criteria. Should these simulations indicate that a violation of the planning criteria occurs, more detailed studies are conducted to determine the severity of the problem and possible measures to alleviate it. Duke Midwest's planning criteria is included in Duke Energy Shared Services, Inc. FERC FORM 715 ***Annual Transmission Planning and Evaluation Report***, April 1, 2011.

Duke Energy Shared Services, Inc. FERC FORM 715 *Annual Transmission Planning and Evaluation Report* HAS BEEN WITHHELD AS CRITICAL ENERGY INFRASTRUCTURE INFORMATION.

Additionally, as indicated earlier, Duke Midwest as a member of MISO will coordinate models and studies with MISO. MISO will review Duke Midwest's proposed plans and make comments and suggestions. Ultimately, MISO has responsibility for development of the regional transmission plan.

C. <u>System-Wide Reliability Measure</u>

At the present time, there is no measure of system-wide reliability that covers the entire system (transmission, distribution, and generation).

D. <u>Evaluation of Adequacy for Load Growth</u>

The transmission system of Duke Midwest is adequate to support load growth and the current level of projected long-term power purchases and sales over the next ten years. This assumes that the planned transmission system expansions are completed as currently scheduled. Duke Midwest's transmission system, as with the transmission system of any other utility, can be significantly affected by the actions of others. In an attempt to evaluate these effects, RFC develops a series of power flow simulation base cases that reflect the expected transmission system configuration and transactions. Should actual conditions differ significantly from those assumed in the base cases, a re-evaluation of the adequacy of the Duke Midwest transmission system would be required.

E. Loss Evaluation

Screening analyses were performed to determine the effect of spending capital dollars solely for the purpose of reducing losses. Since it is becoming increasingly more difficult to construct new transmission lines on new right of way, the analyses assumed that existing transmission lines would be reconductored to reduce losses. The results of the analyses showed that it is NOT economical to spend capital dollars solely for the benefit of reducing losses on a system wide basis.

For example, an analysis on the Duke Indiana system assumed average costs for reconductoring and it used a weighted, average value for the existing losses on the transmission lines. This weighted value was based on existing miles of line in service by voltage class and conductor size. A power flow case was run to determine the existing losses at system peak load by voltage class. This was used as a benchmark when calculating the amount of loss reduction by reconductoring to determine the reasonableness of the results. In this analysis, over one billion dollars would be required to reconductor the entire Duke Indiana transmission system resulting in a reduction of approximately 120 megawatts of losses during the peak loading period. The cost per kilowatt would be over $19,000.

These analyses clearly show that a system wide program of reducing losses on the Duke Midwest transmission system through transmission-related alternatives is not economical. As a result, no loss-reduction alternatives were passed to the integration process. Duke Midwest will continue to evaluate specific cases where it may be economical to reconductor lines based on line loss reduction. The above discussion is not to imply that power and energy losses are not considered. Loss performance is factored into the choice between alternate projects, which are intended to meet other system performance objectives.

F. Transmission Expansion Plans

The transmission system expansion plans for the Duke Midwest system are developed for the purpose of meeting the projected future requirements of the transmission system. The basic methodology used to determine the future requirements is power flow analysis. Power flow representations of the Duke Midwest electric transmission system, which allow computer simulations to determine MW and MVAR flows and the voltages across the system, are maintained for the peak periods of the current year and for future years. These power flow base cases simulate the system under normal conditions with typical generation, and no transmission outages. They are used to determine the general performance of the existing and planned transmission system under normal conditions.

Contingency cases based on the peak load base cases are studied to determine system performance for planned and unplanned transmission and generation outages. The results of these studies are used as a basis to determine the need for and timing of additions to the transmission system. Duke Midwest's planning criteria is included in Duke Energy Shared Services, Inc. FERC FORM 715 ***Annual Transmission Planning and Evaluation Report***, April 1, 2011.

Duke Energy Shared Services, Inc. FERC FORM 715 *Annual Transmission Planning and Evaluation Report* HAS BEEN WITHHELD AS CRITICAL ENERGY INFRASTRUCTURE INFORMATION.

G. Transmission Project Descriptions

The following planned transmission projects include new substation transformers, transmission capacitors, transmission circuits and upgrades of existing circuits.

Duke Indiana plans to continue to install transmission voltage capacitors with over 115 MVAR planned on its system over the next three years. The capacitors will be installed at various existing transmission substations at 69 kV and 138 kV voltages throughout the system. These additions will supplement the existing 2534 MVAR that have been installed and are in service through 2011. These capacitors are necessary to maintain and improve the overall transmission voltage profile, reduce system losses, improve reactive margin at generating stations and reduce interconnection reactive imports. Higher cost alternatives to capacitor installations include construction of additional transmission capacity, static VAR compensators, or local generation.

A new 200 MVA, 345/138 kV transformer addition is planned for the Qualitech substation to allow the conversion of loaded 69 kV lines to 138 kV in Hendricks County in central Indiana by June 2013. This substation bank will provide the northern terminus of a converted line originating at a new Plainfield South substation 138 kV terminal. A total of 16.5 miles of line will be converted to the higher voltage and will require at least four existing distribution substations to be changed to 138 kV source voltage. This line's loading was expected to approach 100 MVA due to the continued commercial and residential load growth in the near term. However revised lower loading forecasts will allow some delay in total project implementation. This planned system upgrade remains valid as only the timing has been adjusted. Converting this line doubles its available capacity to 304 MW and provides local reliability improvements with the addition of remotely controlled substation switching. Alternatives to this line upgrade would have been many more miles of lower voltage line conductor and structure replacements as well as the additional substation transformer capacity to service customers in this load area.

The 13819 transmission line runs between Crawfordsville and Lafayette through both Montgomery and Tippecanoe Counties in western Indiana. This line is a major power source to the Crawfordsville Municipal as well as rural areas north toward Lafayette. Approximately 8.0 miles of this line was rebuilt with new supporting structures and new larger conductors in 2009, with the remaining 17.4 miles now scheduled for replacement in 2013. The total line was originally scheduled for rebuild due to age and condition, however, with extensive structure analysis and select component replacements the remaining line section can be operated reliably for the added time period. The existing conductors will still be capable of the normal and contingency loading demands anticipated due to lower forecasted loading levels as well as other surrounding system changes. Ultimately this line's capacity will be raised to 304 MVA from an existing 120 MVA. Alternatives to this project have more economic cost and land use impacts since they would involve other new remote line(s) on newly acquired rights of way and new substation terminal equipment to integrate these line(s) into the surrounding bulk system.

The Speed substation is a major bulk transmission facility in southern Indiana near Clarksville. This substation has an existing 450 MVA, 345/138 kV power transformer that will need to be upgraded to a 650 MVA unit in the year 2027 assuming no generation retirements at the Gallagher generating station. A similar transformer capacity addition at an alternate site would involve significant investment in new substation terminal equipment with possible land acquisition costs. With the expectation that Gallagher Units 1 and 3 will be retired, the timing of this project is being re-evaluated as part of the MISO study of transmission impact of retirement of Gallagher Units 1 and 3.

A new 345kV transmission interconnection line with LG&E is under review for service in 2014. The new line from Speed Substation to LG&E Paddys West substation would be built partially on existing transmission towers and existing rights of way through the New Albany area in southern Indiana. The total line length from Speed to Paddys West is approximately 17 miles. Duke Indiana will be responsible for the cost of the 345 kV terminal at Speed and LG&E will be responsible for the remaining cost of the project. This development is considered the lowest cost alternative to establish a needed supplemental transmission path between the two systems. The line’s mutual benefits will ensure the future reliability of the bulk system operation should there be various surrounding system contingencies. This project will allow the deferral of the Speed 345/138 kV transformer replacement project by approximately eight years.

A new 230 kV switching station, WestPoint 230, to connect the Tri-County 200 MW wind farm located in Tippecanoe County is planned with an in-service date of August 2013. The new switching station will split the existing Veedersburg West to Attica to Lafayette circuit 23027. The commercial operation date of the Tri-County wind farm is December 2013.

H. IGCC Comments

Duke Indiana petitioned the IURC to receive a CPCN to build an Integrated Gasification Combined Cycle (IGCC) generating plant located at Duke Indiana's existing Edwardsport generating plant in Knox County, Indiana. The project would replace the existing three coal generating units with three new state-of-the art units. The new plant would connect to the Gibson to Whitestown 345 kV circuit through a new 345 kV switching station. MISO studies have been performed and indicate the proposed IGCC plant can be integrated into the transmission system as a Network Resource. The plant is scheduled to be online by the third quarter of 2012. The 345 kV switching is station has been completed and is in service.

I. Economic Projects Comments

Duke Energy Indiana continues stay abreast on MISO expansion criteria and participate in MISO studies and evaluate transmission projects that provide economic value to Duke Indiana customers.

J. STIP - Planned New Transmission Facilities

Description of Projects

See the tables below. More detailed descriptions of these projects can be found in Chapter 7, Section G.

Criteria and Objectives for Monitoring Success

Milestones and criteria used to monitor the transmission facilities projects are typical of construction projects and measured on the following factors:

- Comparison of the actual completion date to the targeted completion date
- Comparison of the actual cost to the budgeted cost

Anticipated Time Frame and Estimated Costs

The cash flows associated with the major new transmission facility projects planned are shown below.

Table G-1
DUKE INDIANA TRANSMISSION PROJECTS

				CASH FLOWS ($000)		
PROJECT NAME	**MILES or MVA**	**kV**	**PROGRESS/ COMPLETION DATE**	**2011**	**2012**	**2013**
Qualitech Sub add 345/138 kV bank/terminal	200	138	6/1/2013	$3484	$1296	$2727
Qualitech-Pittsboro 138 kV circuit	2.6	138	6/1/2013	$12	$1583	$40
Plainfield South Sub 138 kV terminal	-	138	6/1/2013		$1372	$548
Crawfordsville – Concord Jct 138 kV line new conductor	17.4	138	12/31/13	$55	$3360	$2240
Westpoint 230 kV Switching Station	-	230	8/31/2013	$0	$0	$0
Speed – LGE Paddys West 345kV line interconnection	12	345	6/1/2014		$55	$1950

*Excluding AFUDC

Anticipated Project Milestones

The completion of these projects, by their planned in-service dates, is the project milestones.

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The Duke Energy Indiana
2011 Integrated Resource Plan

November 1, 2011

Appendix H:
Index to 2011 Duke Energy Indiana IRP

Appendix H: Index to Duke Energy Indiana 2011 IRP

170 IAC 4-7-1 (2011) Regulatory Requirement	Location in DE-Indiana 2011 IRP Document
Section 1 - Definitions	No Reponse Required
Section 2 - Effects of filing integrated resource planning	No Reponse Required
Section 3 - Applicability	No Reponse Required
Section 4 - Methodology and documentation requirements	
(1) forecast datasets	Chapter 3, Section D; Appendix B
(2) consumption patterns	Chapter 3, Section D; Appendix B
(3) customer surveys	Chapter 3, Sections D & E; Appendix B
(4) customer self-generation	Chapter 3, Section C; Chapter 5, Sections C, D & E
(5) model structure and model performance evaluation	Chapter 3, Sections B & E; Chapter 4, Sections F & G; Chapter 5, Section F; Chapter 6, Section F; Chapter 8, Section B; Appendix A
(6) alternative forecast scenarios	Chapter 2, Section B; Chapter 3, Section F; Chapter 4, Section D; Chapter 8, Section B
(7) fuel inventory and procurement	Chapter 5, Section B
(8) SO_2 emissions allowances	Chapter 6, Sections G & H
(9) expansion planning criteria	Chapter 1, Section A; Chapter 2, Sections B, C & D
(10) power flow study	Appendix G
(11) dynamic stability study	Appendix G
(12) transmission maps	Appendix G
(13) transmission reliability criteria	Appendix G
(14) reliability criteria performance	Appendix G
(15) reliability enhancement efforts	Chapter 5, Section D; Appendix G
(16) avoided cost calculation	Chapter 8, Section B; Appendix D
(17) system lamda and actual demand	Appendix B
(18) public participation procedure	Not applicable
Section 5 - Energy and demand forecasts	
(a)(1) analysis of load shapes	Chapter 3, Section B; Appendix B
(a)(2) disaggregated load shapes	Appendix B
(a)(3) disaggregated data & forecasts	Appendix B
(a)(4) energy and demand levels	Chapter 3, Section F; Appendix B
(a)(5) weather normilization methods	Chapter 3, Sections B & E; Appendix B
(a)(6) energy and demand forecasts	Chapter 3, Section F; Appendix B
(a)(7) forecast performance	Appendix B
(a)(8) end-use forecast methodology	Chapter 3, Section E, part (2); Appendix B
(a)(9) load shape data directions	No response required
(b) alternative peak/energy forecasts	Chapter 3, Section F

(Appendix H Index continued)

170 IAC 4-7-1 (2011) Regulatory Requirement	Location in DE-Indiana 2011 IRP Document
Section 6 - Resource assessment	
(a)(1) net dependable capacity	Chapter 5, Figure 5-A; Appendix F
(a)(2) expected capacity changes	Chapter 1, Section A; Chapter 5, Section B; Chapter 8, Section B
(a)(3) fuel price forecast	Chapter 1, Section A; Chapter 5, Section B; Chapter 8, Section B
(a)(4) significant environmental effects	Chapter 1, Section A; Chapter 2, Section B; Chapter 5, Section B; Chapter 6, Sections F, G & H; Appendix E, Section B
(a)(5) power transactions	Chapter 3, Section B; Chapter 5, Sections C, D, E & G; Appendix A
(a)(6) transmission system analysis	Appendix G
(a)(7) demand-side programs	Chapter 4, All Sections; Appendix C; Appendix E, Section C
(b)(1) DSM program description	Chapter 4, All Sections; Appendix C; Appendix E, Section C
(b)(2) DSM strategy	Chapter 4, All Sections; Appendix C; Appendix E, Section C
(b)(3) DSM avoided cost projections	Appendix C; Appendix E, Section C
(b)(4) DSM customer class affected	Chapter 4, Sections D & E; Appendix E, Section C
(b)(5) DSM impact projections	Chapter 1, Section A; Chapter 4, Sections D & E
(b)(6) DSM program cost projections	Appendix E, Section C
(b)(7) DSM energy/demand savings	Chapter 1, Section A; Chapter 4, Section E; Appendix C
(b)(8) DSM program penetration	Chapter 4, Section E; Appendix C
(b)(9) DSM impact on systems	Chapter 4, Section E; Appendix C
(c)(1) supply-side resource description	Chapter 5, Sections E, F & J; Chapter 8, Section B; Appendix A; Appendix E
(c)(2) environmental effects	Chapter 1, Section A; Chapter 2, Section C; Chapter 6; Appendix E, Section B
(c)(3) CAAA impact discussion	Chapter 1, Section A; Chapter 2, Section C; Chapter 6; Appendix E, Section B
(c)(4) utility coordinated cost reduction	Chapter 5, Section F
(d)(1) transmission network analysis	Appendix G
(d)(2) transmission network design	Appendix G
(d)(3) transmission expansion	Appendix G
(d)(4) transmission expansion costs	Appendix G
Section 7 - Selection of future resources	
(a) resource alternative screening	Chapter 4, Sections F & G; Chapter 5, Section F; Chapter 8, Section B; Appendix A; Appendix C
(b) DSM tests	Chapter 4, Section F; Appendix C
(c) life cycle NPV impacts	Chapter 8, Section B; Appendix D
(d)(1) cost/benefit components	Chapter 5, Section F; Chapter 8, Section B; Appendix A; Appendix C
(d)(2) cost/benefit equation	Chapter 5, Section F; Chapter 8, Section B; Appendix A; Appendix C
(e) DSM test exception	No response required
(f) load build directions	No response required
Section 8 - Resource integration	
(1) resource plan description	Chapter 1, Sections A & B; Chapter 8, Section B
(2) significant factors	Chapter 1, Sections A & B; Chapter 2; Chapter 6; Chapter 8, Section B
(3) PVRR of resource plan	Chapter 8, Section B; Appendix A
(4) utilization of all resources	Chapter 4; Chapter 5, Sections B, E, F & H; Chapter 8, Section B; Appendix C; Appendix E
(5) regulation risk management	Chapter 1, Section A; Chapter 2, Section B; Chapter 6; Chapter 8, Section B
(6) supply-side selection economics	Chapter 5, Sections E & F; Chapter 8, Section B; Appendix A; Appendix E

(Appendix H Index continued)

170 IAC 4-7-1 (2011) **Regulatory Requirement**	**Location in DE-Indiana 2011 IRP Document**
Section 8 - Resource integration	
(7) distributed generation utilization	Chapter 3, Section C; Chapter 4, Section F; Chapter 5, Sections C & E
(8)(A) plan operating and capital costs	Chapter 8, Section B; Appendix D
(8)(B) average price per kWh	Chapter 8, Section B; Appendix D
(8)(C) annual avoided cost	Appendix D
(8)(D) plan rate impacts	Appendix D
(8)(E) plan resource financing	Appendix D; Appendix E
(9) regulation assumptions	Chapter 1, Section A; Chapter 2, Section C; Chapter 5, Section B; Chapter 6; Chapter 8, Section B
(10)(A) demand sensitivity	Chapter 3, Section F; Chapter 8, Section B; Appendix B
(10)(B) resource cost sensitivity	Chapter 5, Section F; Chapter 8, Section B
(10)(C) other factor sensitivities	Chapter 5, Section F; Chapter 8, Section B
Section 9 - Short term action plan	
(1)(A) description/objective	Appendix D, Sections A, B & C
(1)(B) progress measurement criteria	Appendix D, Sections A, B & C
(1)(C) progress to date	Appendix D, Sections A, B & C
(2) small business participation in DSM	Appendix D, Section C
(3) implementation schedule	Appendix D, Sections A, B & C
(4) implementation timetable	Appendix D, Sections A, B & C
(5) plan budget	Appendix D, Sections A, B & C