



An **AEP** Company

Journey to a More Fully Integrated Planning Process

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Introductions

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Overview

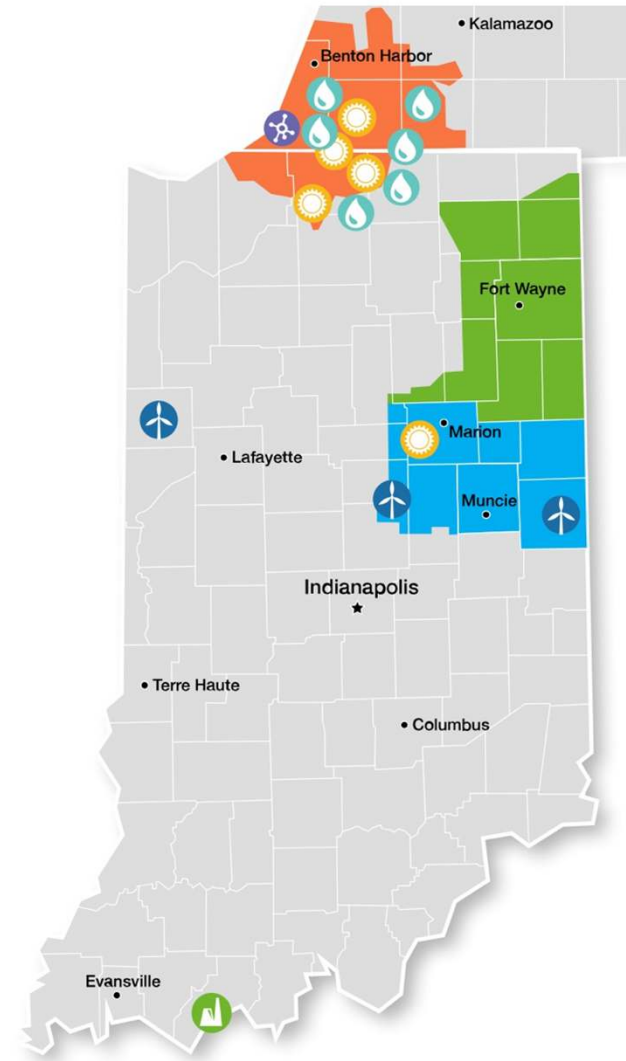
Indiana Michigan Power (I&M)

(organized in Indiana in 1907) is engaged in the generation, transmission and distribution of electric power to approximately 614,000 retail customers in northern and eastern Indiana and southwestern Michigan, and provides wholesale power to other electric utility companies, rural electric cooperatives, municipalities and other market participants. As of May 1, 2023, I&M had 2,006 employees. I&M is a member of PJM.

Note: Customer and line mile data as of 5/01/2023. Capacity data as of 9/30/2022.

¹ In 2022, over 80% of energy used to serve our customers was emission-free.

QUICK FACTS		
Total Customers	614,000	
Residential	530,000	
Commercial	77,000	
Industrial	5,000	
Other	2,000	
Owned Generating Capacity	3,588 MW	
PPA Capacity (OVEC/Wind)	637 MW	
Generating & PPA by Fuel Mix ¹	Capacity	2022 Actual
Coal	46.1%	19.0%
Nuclear	44.2%	74.6%
Hydro, Wind & Solar	9.7%	6.4%
Transmission Miles	3,920	
Distribution Miles	20,772	

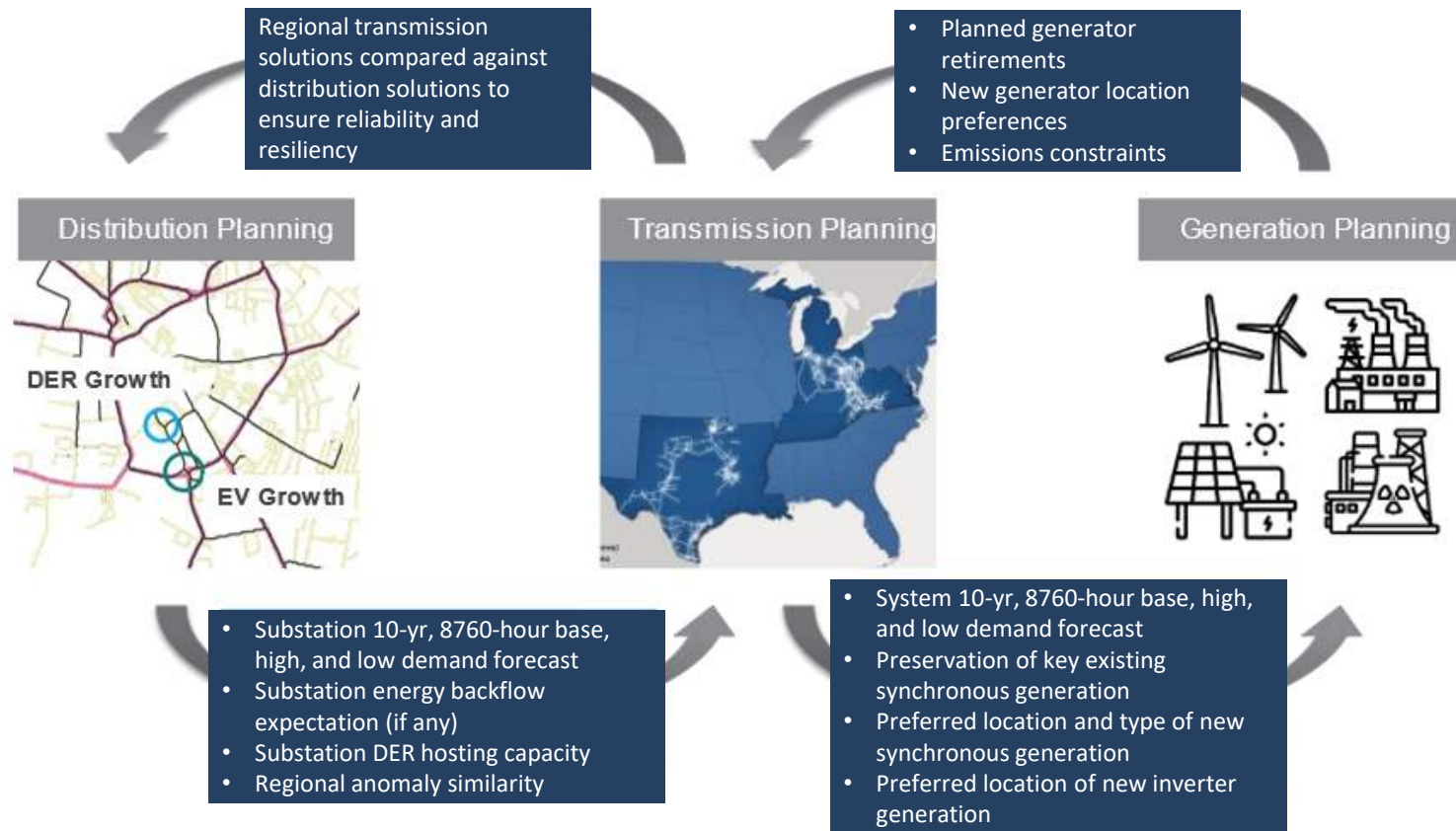


Journey to a More Fully Integrated Planning Process

Introduction to AEP Journey

- Integrated Planning catalyst
- Current efforts
- Transition challenges
- Transmission Planning Review
- Distribution Planning Review
- Summary/Conclusion

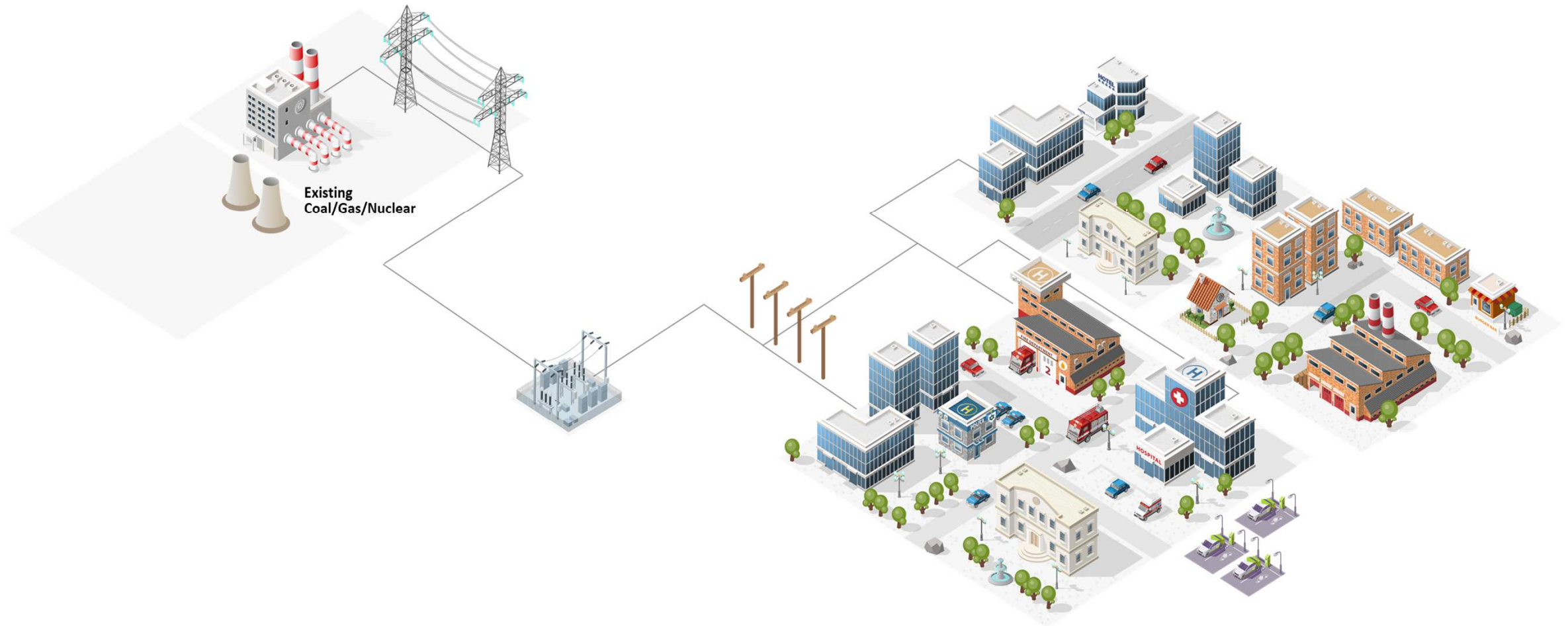
Utility Planning Evolution



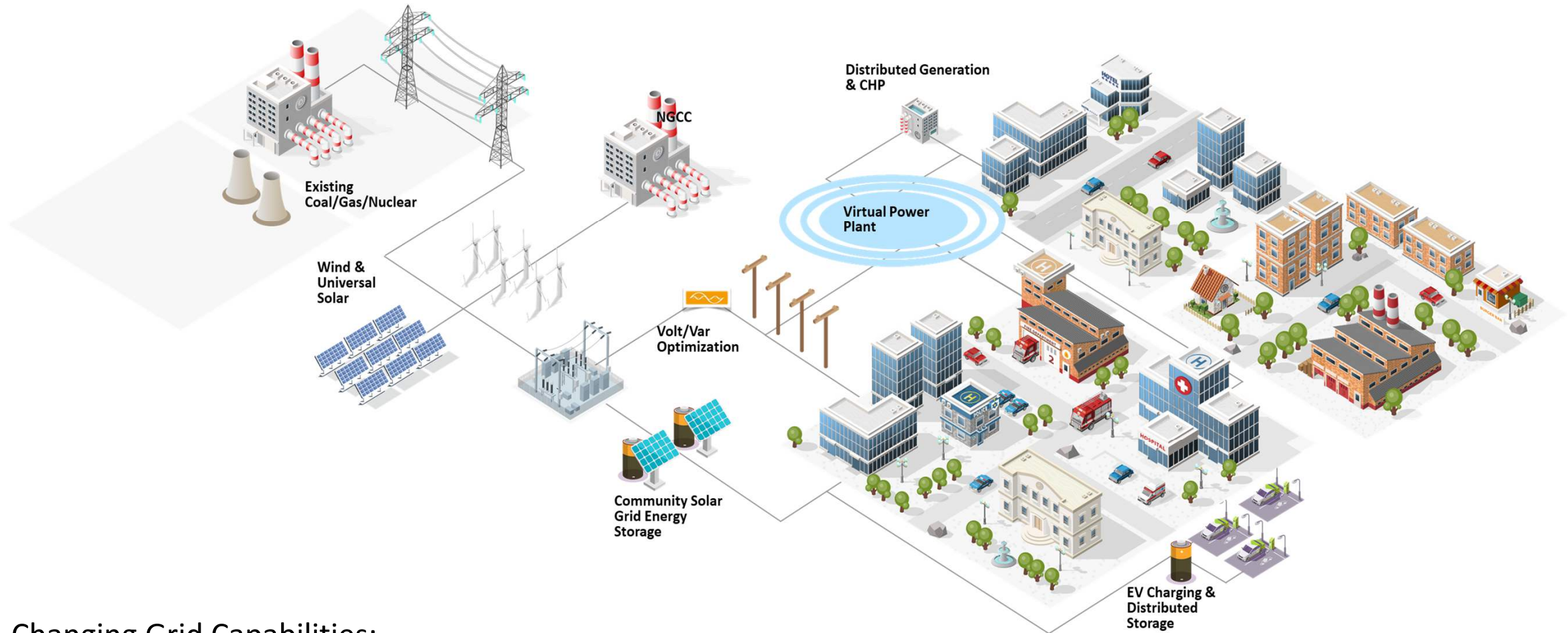
Evolution Catalysts

- Emergence and growth of renewable and Distributed Energy Resource (DER) options
- Need for maintaining system stability while incorporating variable energy resources
- Need for accommodating resources, that may be integrated at the transmission or distribution level

Grid of the Past



Grid of the Future












Changing Grid Capabilities:

- Central Generation remains at the core
- Optimization (flexibility, longevity, asset health)
- Innovation (analytics, technology, operations)

Current Status

- Planning Integration Current Activities
 - Energy Efficiency, Demand Response and Conservation Voltage Reduction (CVR) resources
 - Consideration of Transmission costs and integration impacts of resources selected in the IRP/RFP process
 - Integration of avoided distribution capacity costs included in IRP Energy Efficiency bundles
 - Consideration of DER and EV growth in load forecasts

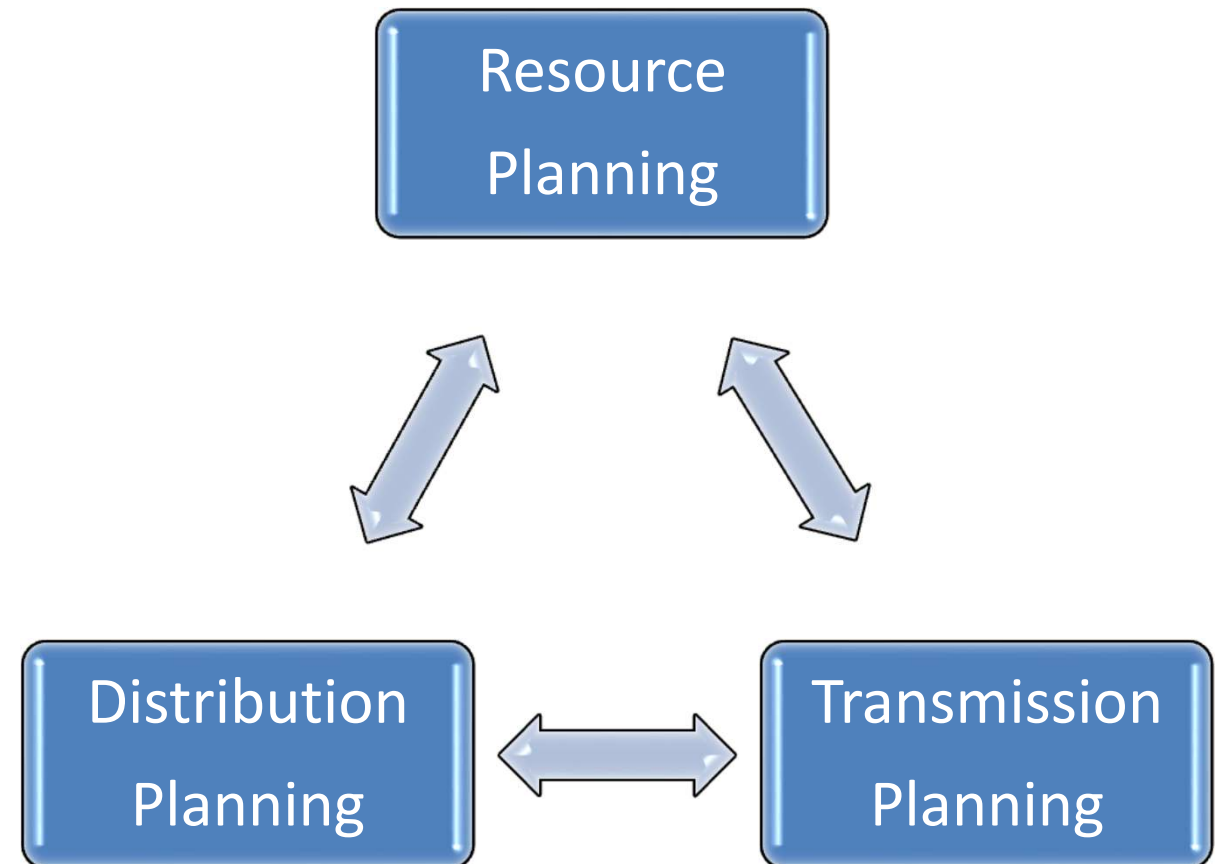
Transition Challenges

<h3>Common Planning Criteria</h3>  <p>Alignment in objectives, metrics, time horizons, common scenarios, and assumptions across planning functions</p>	<h3>Conditions External to AEP</h3>  <p>Ensuring that all planning functions utilize consistent inputs when simulating conditions outside of AEP's service territories, when evaluating scenarios that involve changes to market conditions</p>	<h3>Load Forecasting</h3>  <p>Develop process for feeder level forecasts including DER and EV forecasts, develop statistical distributions that can be used for scenario analysis and stochastics</p>
<h3>Grid Services</h3>  <p>Study the variability of intermittent generation, determine other services and technologies that need to be studied, analyze data needs and associated costs</p>	<h3>DER & NWA</h3>  <p>Determine what technologies are feasible and likely, develop analytical valuation methods, determine data needs</p>	<h3>T&D Uncertainty</h3>  <p>Determine methods and techniques to address uncertainty of siting and production from intermittent renewable generation, determine data needs, and how to include this in expansion plans</p>
<h3>Grid Vulnerability</h3>  <p>Develop tools and processes to assess grid vulnerabilities such as predictive operational failure capabilities</p>	<h3>Model Inventory</h3>  <p>Perform inventory of models including leased and user-created models, determine what models will be needed to address future challenges, and work with model developers</p>	<h3>Data Management System</h3>  <p>Map all data flows in current process, develop data management system project scope, work with corporate IT, and potentially outside vendors</p>

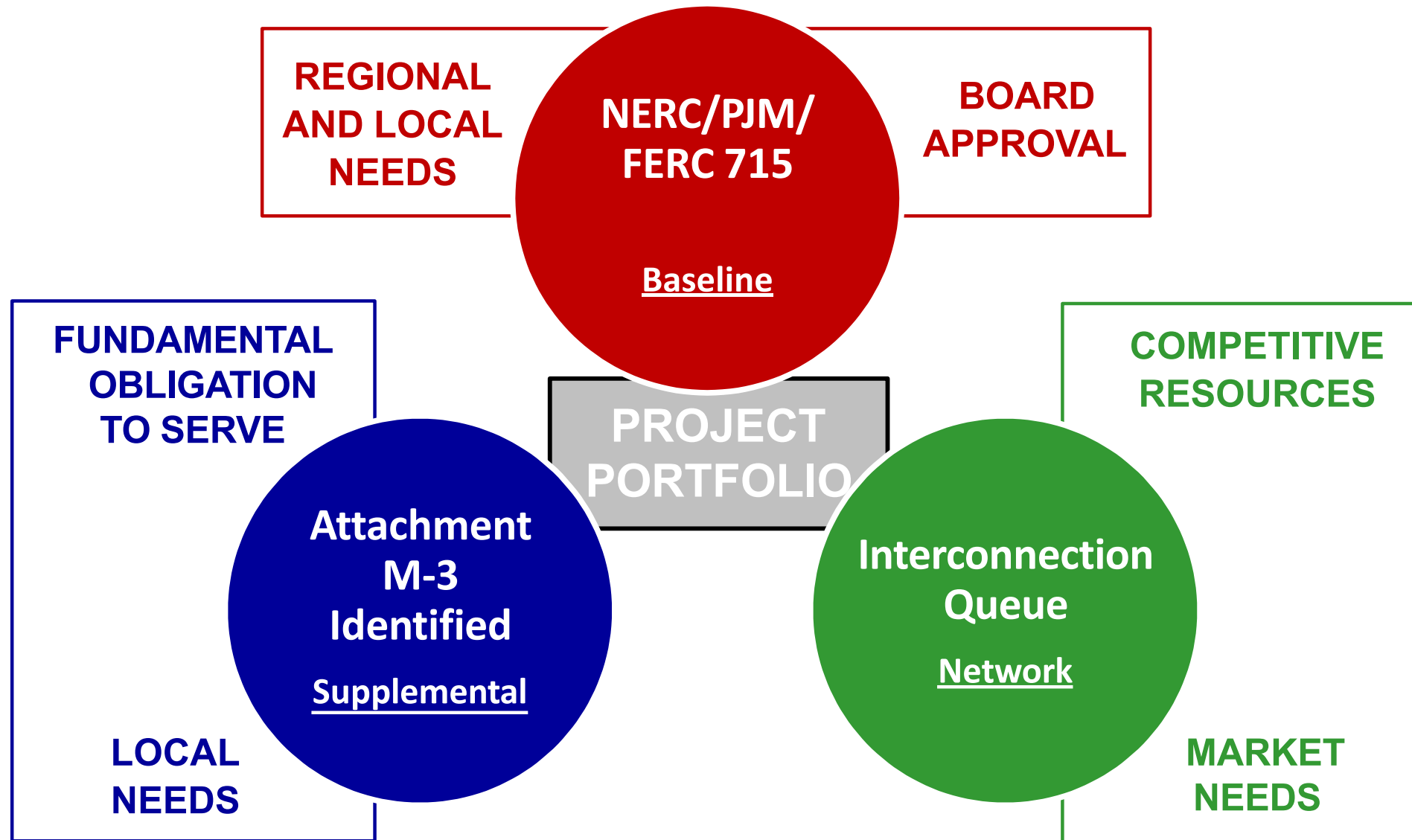
Aligning Planning

Planning alignment occurs by bringing the processes together

- Direction provided through consistent set of policy objectives
- Input assumptions driven from a common foundation
- Decisions informed through information exchange

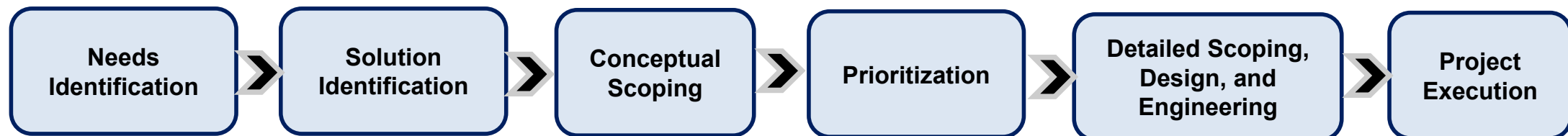


Overview of Transmission Planning



Distribution Planning

- I&M's Distribution Planning process is designed to identify and prioritize required work and to ensure cost-effective distribution system enhancements are implemented.
- Two key steps in the Distribution Planning process that are evolving to further integrate the company's distribution and generation goals and processes include the Needs Identification stage and the Solution Identification stage



High Level Distribution Planning Process Overview

Distribution Planning

- At the Needs Identification stage, I&M is working to better align some of the inputs used in the load forecasts used across the generation and distribution space (like EV and DER penetration forecasts, for example).
- At the Solution Identification stage, I&M is working to more consistently identify and evaluate two types of opportunities:
 - The application of distribution connected generation and the evaluation for potential co-benefits.
 - The application of non-wires alternatives with the primary focus of addressing distribution-specific needs, which may also provide co-benefits.
- As I&M continues its journey to integrate its planning processes, additional changes and adjustments will be pursued in the Distribution Planning processes to align and deliver value to customers.

Summary/Conclusion

- Integration of Generation, Transmission and Distribution planning will be evolutionary
- Current planning processes are complex and will require intentional and deliberate changes
- Objective will be a plan that addresses optimal costs and reliability more cohesively across the planning teams

Questions

