



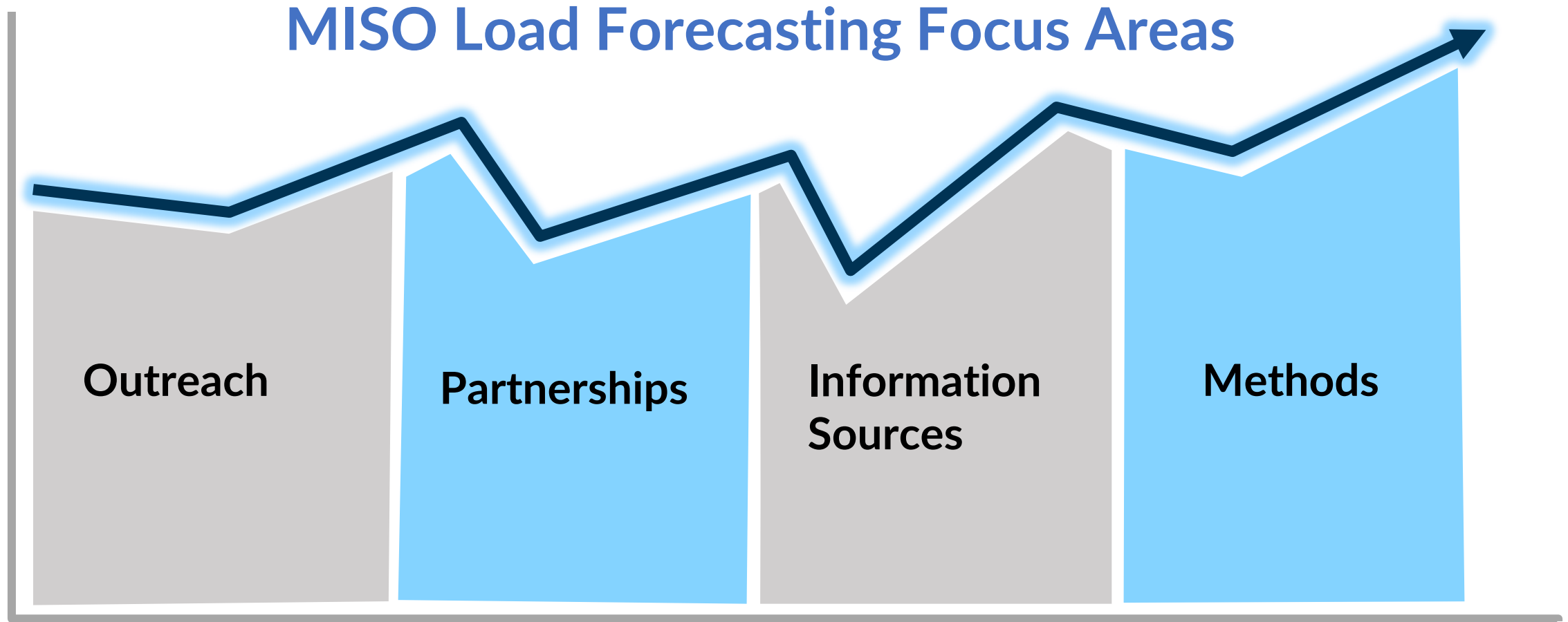
Discussion on 2024 ESIG Forecasting & Markets Workshop

June 2024

Existing MISO Processes are Segmented by Timeframe and Leverage Varying Inputs

	 Short-term	 Near-term	 Long-term
Time frame	Multi-day	2-5 years	5-20 years
Inputs/ Assumptions	Load Serving Entity submissions and weather data	Member Submissions	Macroeconomics, Historical loads and weather, Energy policy goals
Use case	Informs demand requirements for real-time balancing	Informs planning reserve for reliability needs	Informs demand requirements for planning studies

Developing Lasting and Adaptable Best-Practices Approaches



Shifting towards a More Balanced Methodology

Traditional Forecasting

- Econometric-based evaluation of gross load
- Driven by standard economic indicators

Transitional Forecasting

- Innovative techniques to better capture emerging growth sectors
- Driven by reconstituted load

Future Focus

- Enhancements including customer segmentation and advanced end-use and net-load analytics.
- Driven by observed net-load
- Incorporate extreme weather events

Segmenting to Better Assess Consumer Behavior and Electric Demand across Customer Types

Loads by customer class are *roughly* distributed by thirds.

1/3

Residential

Residential loads are anticipated to increase

**End-Use
focus**

1/3

Commercial

Commercial loads are expected exhibit a mixture of residential and industrial growth

**Econometric
focus**

1/3

Industrial

Industrial loads are anticipated to increase greatly but indeterminately

**Industry Classification
focus**

ILLUSTRATIVE—For discussion purposes only

Evolving Customers Making Classification Needs More Vital than Ever

Residential	Small Commercial	Large Commercial	Small Industrial	Large Industrial	Data Center
2 kW	20 kW	200 kW	2,000 kW	20,000 kW	200,000 kW
▪ Typical residential customer	▪ Convenience Store ▪ Dentist Office	▪ Large pharmacy ▪ Small grocery	▪ Hospital ▪ Large warehouse retailer	▪ Medium/Large university ▪ Semiconductor manufacturing plant	▪ Future hyperscale data centers

Bridging Historical Data with Forward-Looking Load Projections

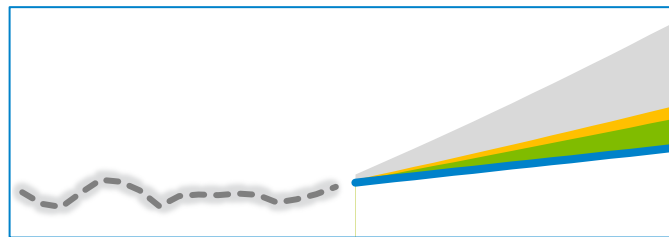
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Gather Driver Penetration and Forecast Compendium by Customer Class

- Technology Penetration
- Load Determinants
- End-Usage Profiles
- Evolutionary Behavior

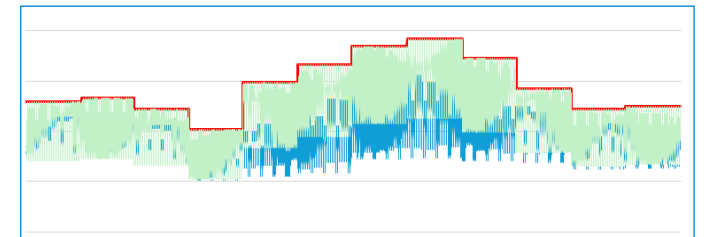
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Develop Long-Term Monthly Projections

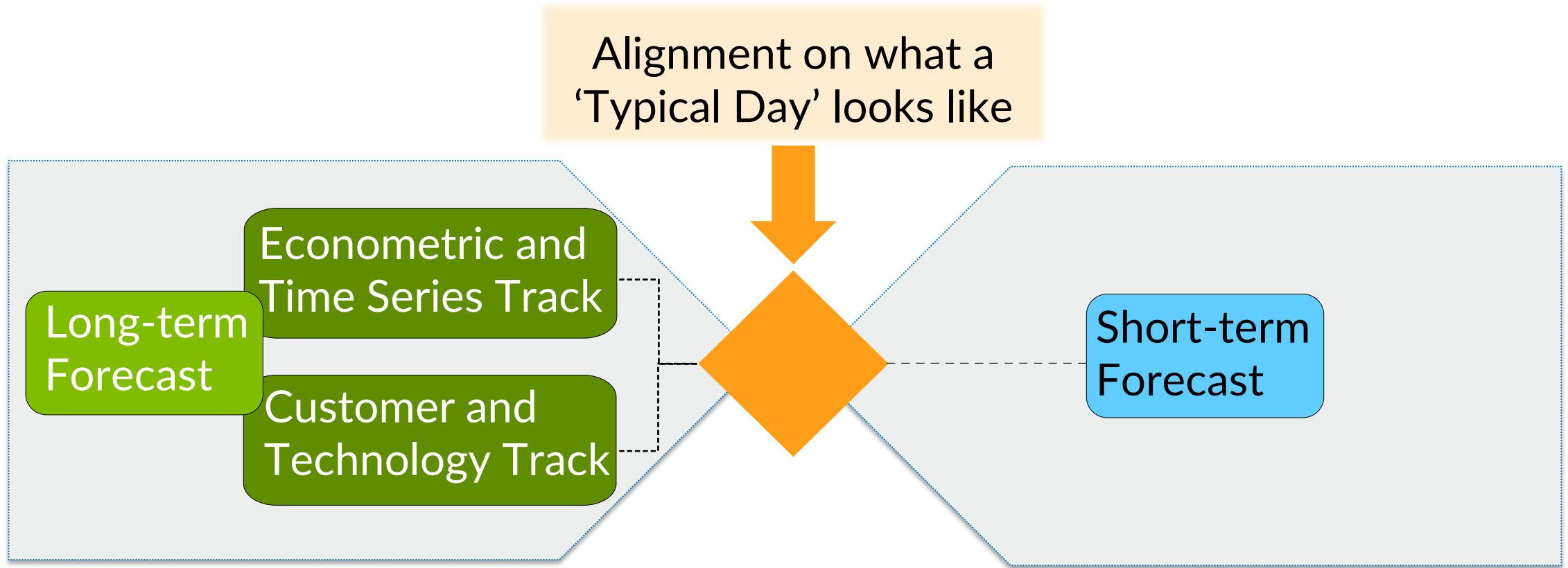


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Allocate and Rehash Hourly Locational Load Forecast



Internally Cascading Load Forecast Processes in a Streamlined Manner



**Hourly load shapes are the “knot in the bow tie”
that help unifying MISO’s various forecast processes**

Thank you