

# ***SUFG ELECTRICITY PRICE & DEMAND MODELING - IMPACT OF ELECTRIC VEHICLES***

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Presented to the 21<sup>st</sup> Century Energy Policy  
Development Task Force

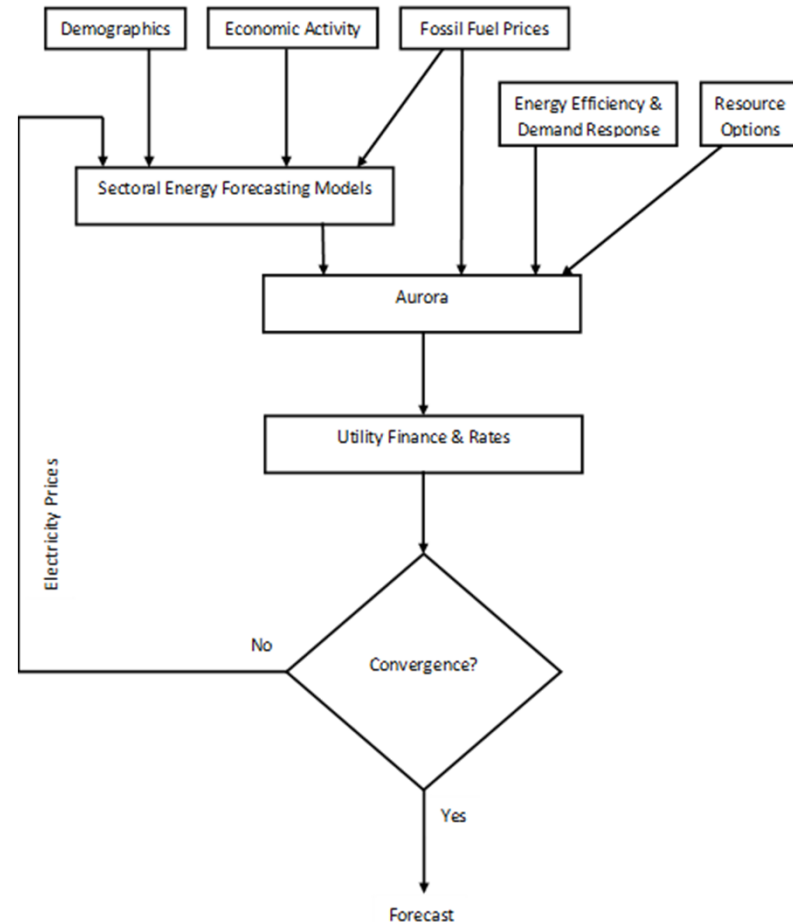
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State Utility Forecasting Group

# SUFG Forecasting Modeling System

- Changes in load affect future resource additions and fuel/maintenance costs
- Changes in resource additions affect revenue from return on investment
- Changes in revenue requirements affect electricity prices
- Changes in electricity prices affect demand for electricity



## *How Significant Will EVs Be?*

**If 10% of urban miles were EVs? If 10% of total miles were EVs?**

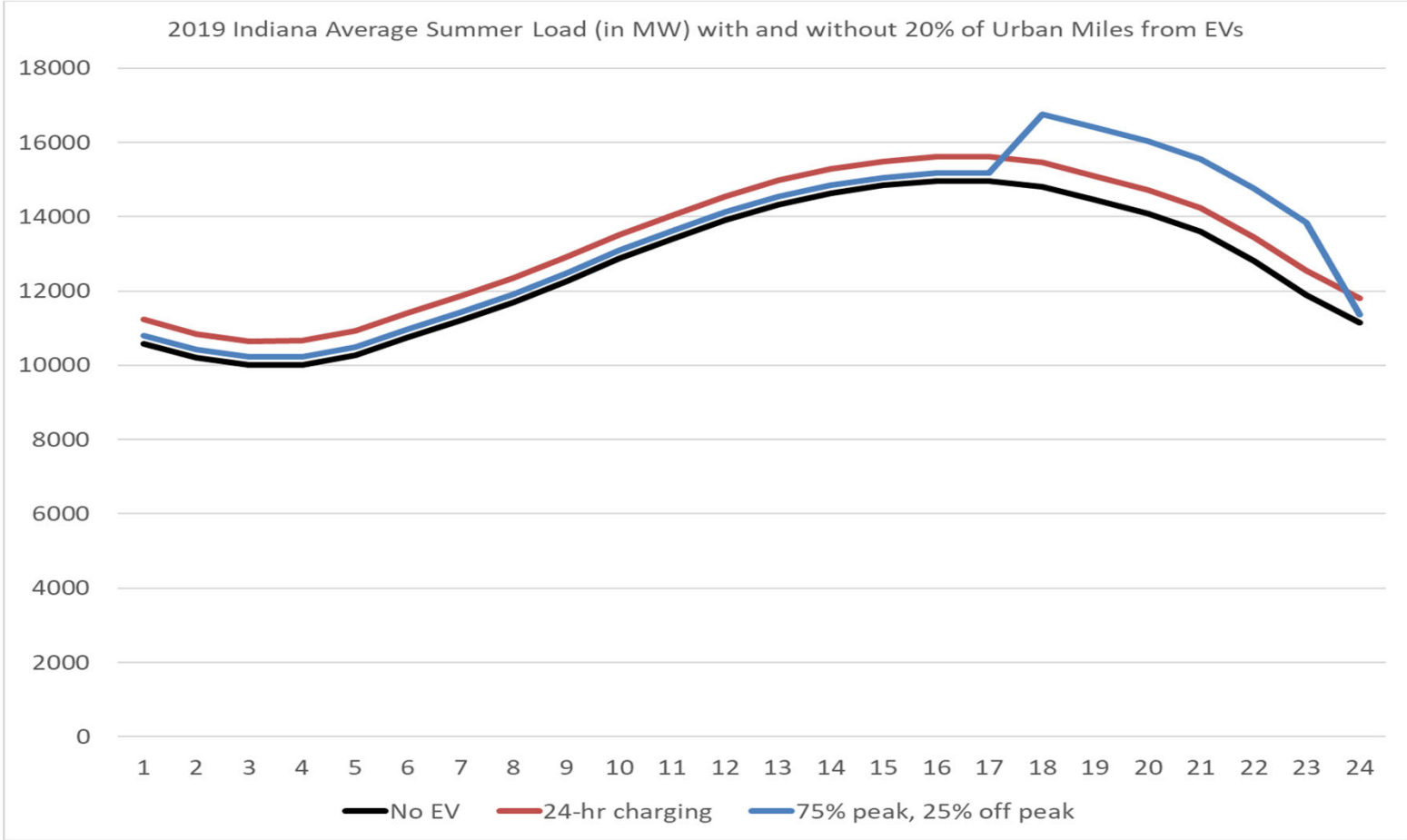
- Rough analysis based on 2019 data from Federal Highway Administration and Energy Information Administration
- A number of assumptions were made, so focus on the magnitude of the impacts rather than the specific numbers
  - Miles/kWh for light duty vehicles (LDV) based on typical EPA ratings
  - Miles/kWh for medium duty vehicles (MDV) and heavy duty vehicles (HDV) based on mid-range value from ORNL report
- Share of miles traveled by LDV vs MDV+HDV was not available at the state level, so national shares were used

## *Increase in Electric Load Due to Increase in EVs*

<b>10% of Urban Miles Traveled</b>	<b>% of Residential Load</b>	<b>% of Commercial Load</b>	<b>% of Total Load</b>
LDV	3.2%		1.0%
MDV+HDV		6.9%	1.8%
LDV+MDV+HDV			2.8%

<b>10% of Total Miles Traveled</b>	<b>% of Residential Load</b>	<b>% of Commercial Load</b>	<b>% of Total Load</b>
LDV	5.4%		1.6%
MDV+HDV		12.7%	2.9%
LDV+MDV+HDV			4.5%

# The Impact Depends on When the EVs are Charged



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## Price Impact

Depends on how costs change relative to load change

- $Price = \frac{Required\ Revenue}{Electricity\ Sales}$
- If electricity sales grow faster than revenue requirements, prices decrease
- If revenue requirements grow faster than electricity sales, prices increase
- If EVs result in substantial new resource requirements (as in 75/25 example) prices would be higher than if they do not (as in 24 hour charging)
- SUFG ran a scenario with a high level of EV for LBNL's distribution analysis (for IURC report to the Task Force)
  - Price impacts were small

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