# Load Forecast Model Development

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Resource Adequacy Planning

Load Analysis Subcommittee

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- PJM has engaged with Itron to perform a model review and to make recommendations for potential model enhancements as we transition to an hourly model for the 2023 Load Forecast.

- PJM has been meeting weekly with Itron since the end of April to discuss existing methodology and potential methodological improvements.

- Final report is expected in late July.
  - LAS next meets on July 28

- PJM currently uses Residential, Commercial, and Industrial sector models to shape expectations for heating, cooling, and other (non-weather sensitive)

  – Relies on annual data from EIA 861

- Investigation into combining annual data with monthly shapes to increase the frequency of the models.

  – EIA 861m: https://www.eia.gov/electricity/data/eia861m/

- Increased frequency of sector models…
  - More data points
  - Improved inference of historical heating and cooling trends
  - Improved judgment on future trends
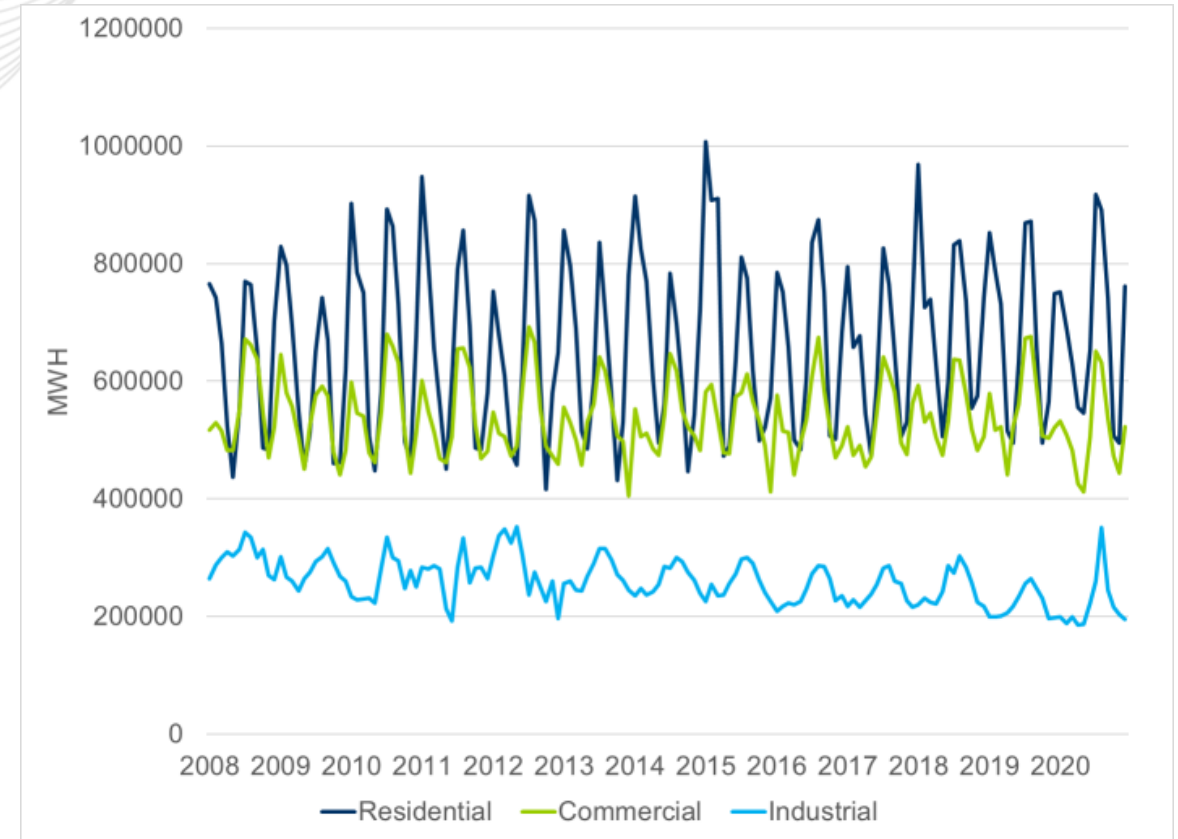
- Investigating improving calibration of Residential and Commercial models

- National Renewable Energy Laboratory has produced granular energy usage data on residential and commercial building stock.
  - https://resstock.nrel.gov/
  - https://comstock.nrel.gov/

- Hourly model construction
  - Itron has been developing test hourly gross load models for review by PJM
    - 24 hourly models that are then combined to produce 8760 hourly output
    - Varying complexity

  - Zonal hourly models would then be simulated through weather, adjusted for expectations for solar, storage, and EVs, and combined to produce RTO and LDA totals.

- Hourly models will require hourly shapes…

  – Behind-the-Meter solar is already handled through our back-casting

  – Storage and EVs will require hourly shapes.

- NREL

  – EVI-Pro: Electric Vehicle Infrastructure – Projection Tool

    - https://www.nrel.gov/transportation/evi-pro.html

    - https://afdc.energy.gov/evi-pro-lite/load-profile

  – Tool allows user to experiment with charging strategy

    - Today: EV owners might prefer home charging and charging as fast as possible

    - Future: Some blend of deferred charging to avoid time-of-use rates

Per Vehicle Charging (KWH) Under Different Scenarios

- Prefer to home charge and as fast as possible
- Less home preference, delay work charging, and home delay charging till midnight
- Less home preference, delay work charging, and home delay charging to finish by departure
- Less home preference, work immediate even spread, and home immediate charging even spread
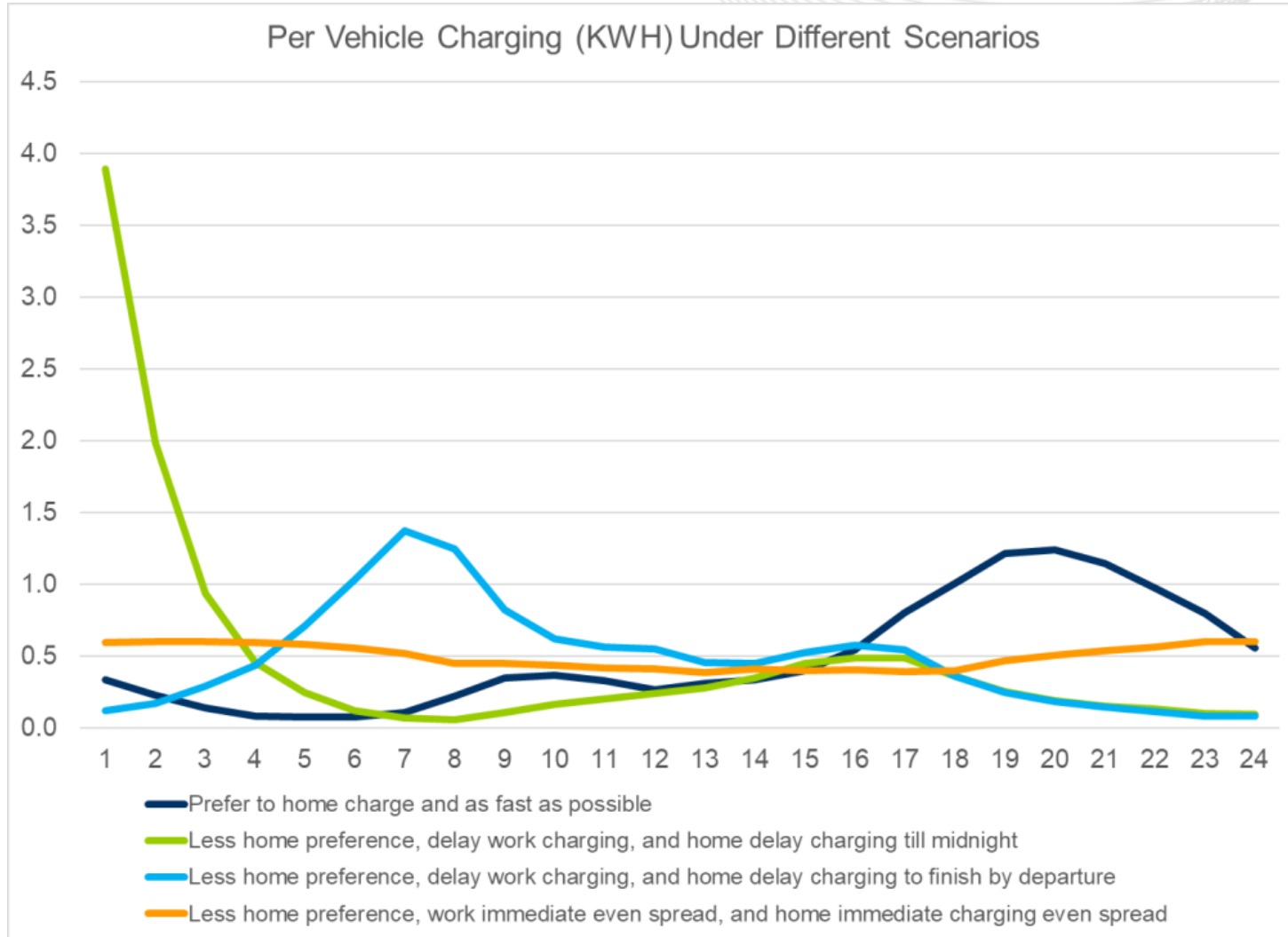
- Current
  - Predominately charging that coincides with peak (but very few EVs and thus few MWs)

- Future (transition towards)
  - Some mix of charging shapes that seek to avoid peak contributions

- PJM's engagement with Itron is ongoing.

  – Stakeholders are invited to provide verbal feedback today or written feedback later that can be communicated with Itron
    - Written feedback should be provided by 6/17 (email load_analysis_team@pjm.com), and will be posted to 6/10 LAS meeting materials

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