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Forecasting System Peak Under Peak-Shifting

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Recent Trends in Hourly System Load Shapes

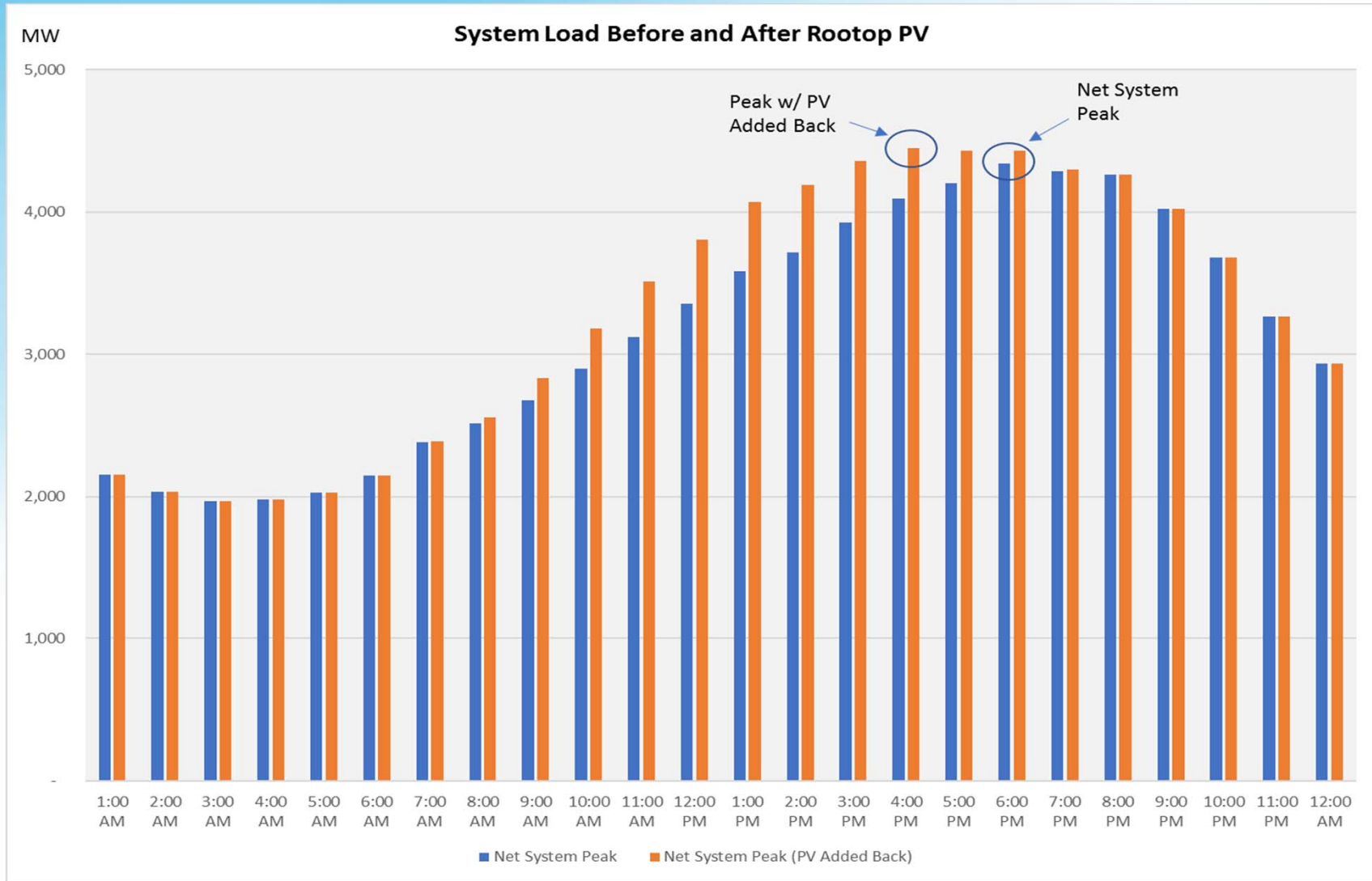


- SDG&E is experiencing load shapes that are shifting significantly due to new technologies in the service territory.

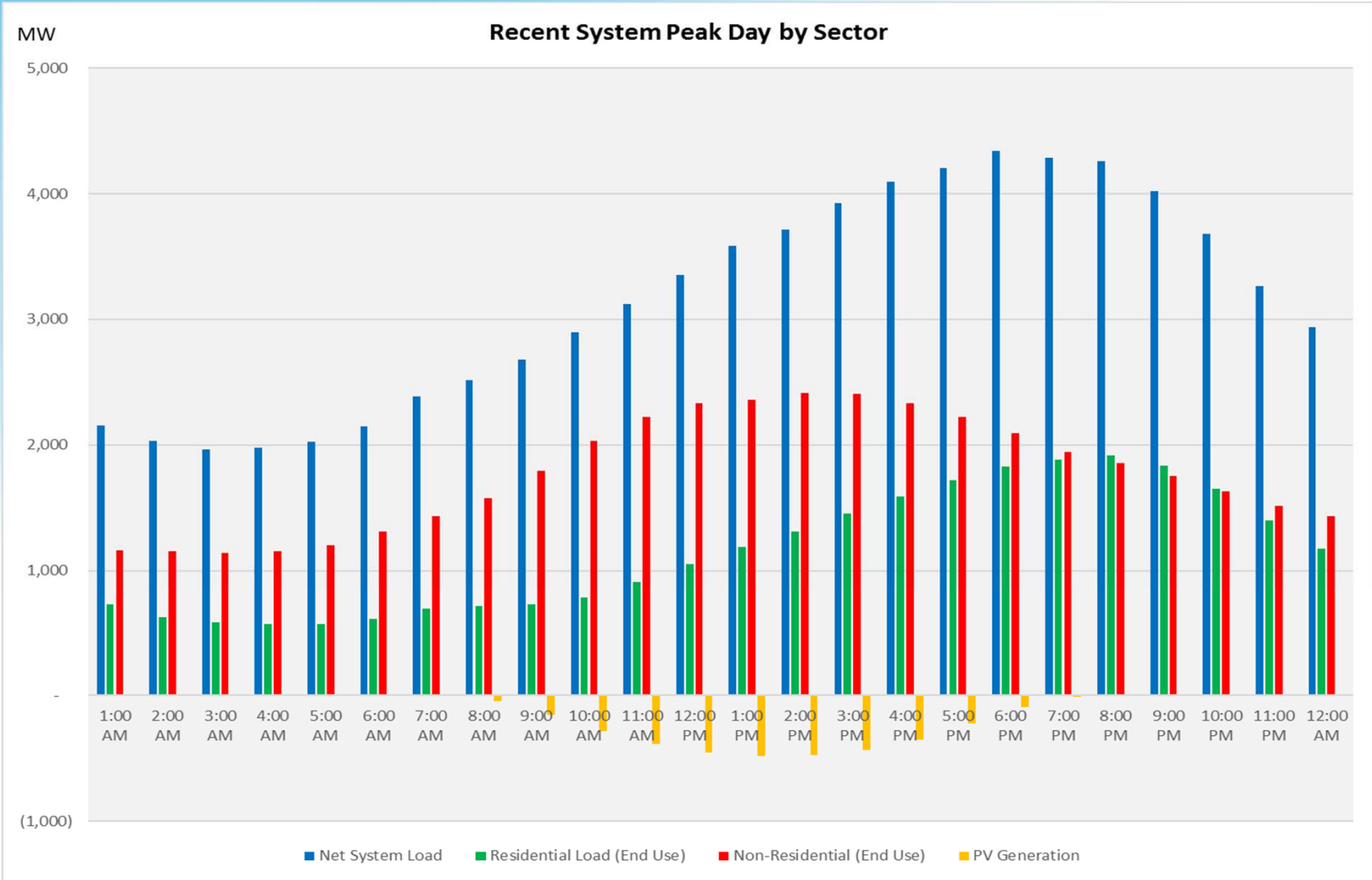
At the end of 2016:

- Approximately 700 MW (installed capacity) of rooftop solar
- Approximately 22,000 Electric Vehicles (Estimated annual consumption of 77,000 MWH)
- **Challenge:**
 - SDG&E's hourly loads are (and will continue to be) impacted by increasing levels of PV, EV and other technologies, causing accurate forecasting to become more difficult with traditional methods.
- **Innovation:**
 - As a result, SDG&E has revised its long-term system peak forecast framework to analyze the impacts from these new technologies.
 - For example, the impact of solar on peak load is known as "peak shifting".

Example of Peak-Shifting on Recent System Peak Day



Trends Under the System Load Shape



Change in System Peak Forecast Framework



- Historically used a single equation system peak model
 - System peaks were considered to occur in the afternoon (2-5 P.M.)
 - Included assumptions for system peak weather, overall energy sales trends and calendar information.
 - Took into account PV generation, non-PV self-served generation, EV charging and demand response.
 - Forecast required the selection of a peak hour to include forecasted values of PV generation, non-PV self-served generation and EV charging.
- Revised framework moved to hourly peak models that match hourly loads with appropriate PV generation, other self served generation, EV charging and DR.
 - Includes assumptions for system peak weather and trends for heating, cooling & base load (for residential and non-residential classes) and calendar information.
 - All 24 hours of the system peak day are forecasted.
 - Allows the system peak to float by hour depending on the technologies that impact peak (for example: less PV if peak is moving to later in the day).

Impact of Technologies on System Peak

