Grid Modernization Council Meeting 05/11/2023

FORECASTING 101

Forecasting 101 – Why do we Forecast

Utilities must forecast because infrastructure takes years to plan, site, and build

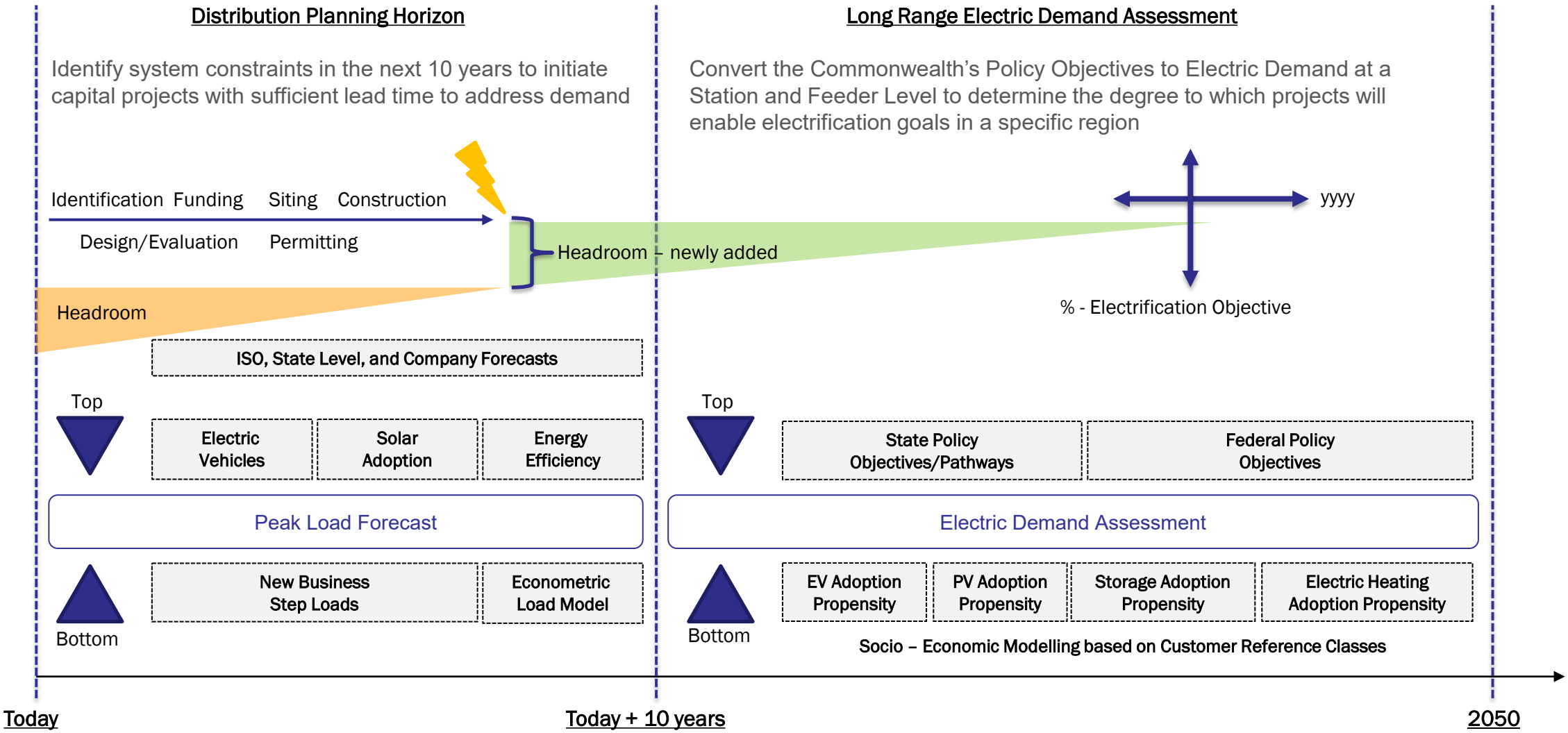
- Transmission → 10+ years
- Substations → 5-8 years
- Distribution → weeks for service upgrades, 2-3 years for circuit re-designs

The bigger the project, the longer it takes, the longer range the forecast

- Bigger Projects also have larger areas they service
- Forecasts over larger areas are significantly more accurate
- Geographically granular forecasts have significant uncertainties

Forecasts are created by geographic region or bulk station

Forecasting 101 – Forecasting Framework



10 – Year Forecast – Peak Reporting

Final reported peak

90/10 weather adjustment

Small Solar Generation at time of peak

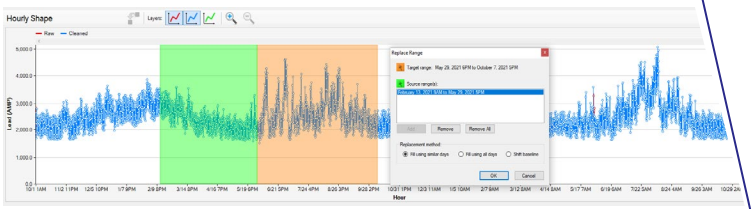
Large Solar Generation at time of peak

Any other generation

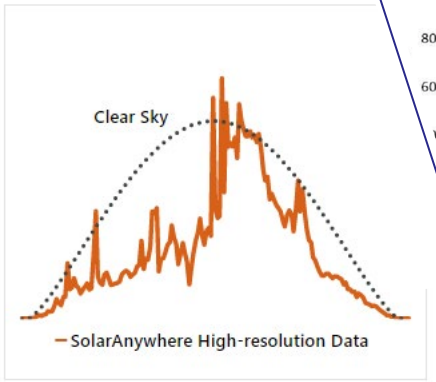
Transfer Correction

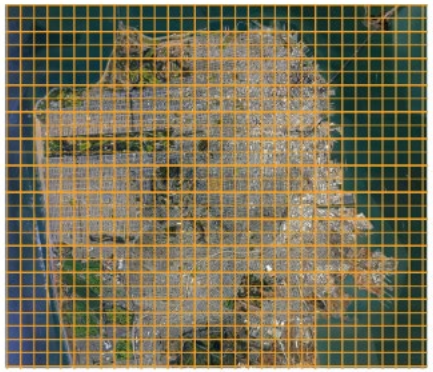
Reported Net Station Peak

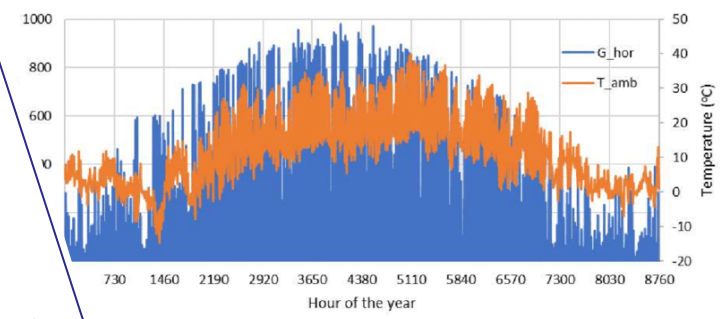
Historic SCADA readings on all large generation installations



Historic, satellite-based weather data to calculate non-metered solar output







Historic, satellite-based weather data to calculate non-metered solar output

Reported Weather Normalized 90/10 Net Station Peak

10 Year Forecast – Coincident Components

Econometric Trend Load Model

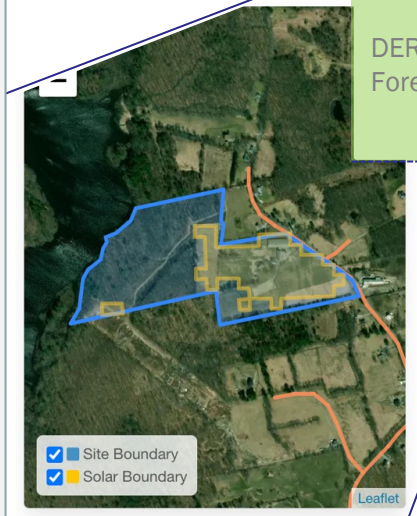
Forecasted Weather Normalized 90/10 Gross Station Peak

Energy Efficiency

DER Forecast

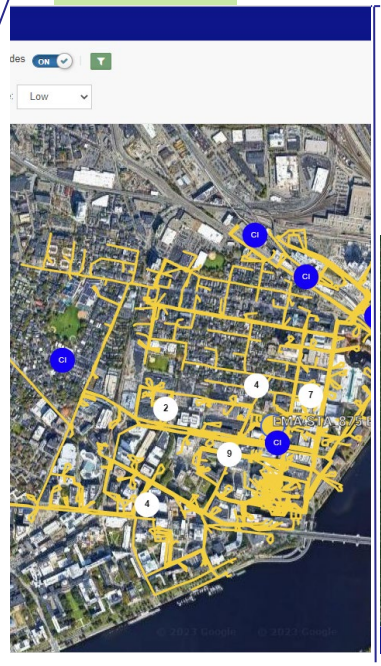
Existing

Forecasted



Adoption propensity modeling using service territory wide parcel data base and geospatial forecasting

Permanent Load Transfers

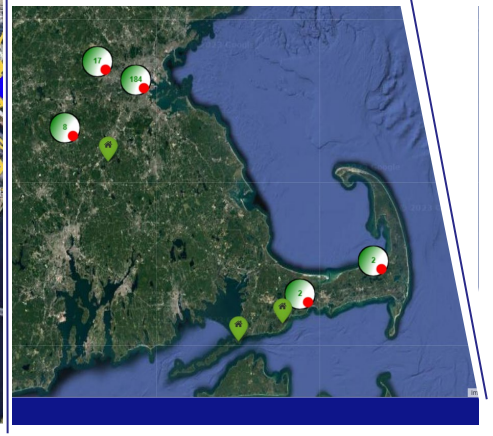


Strategic system reconfiguration for load shifting

Step Loads

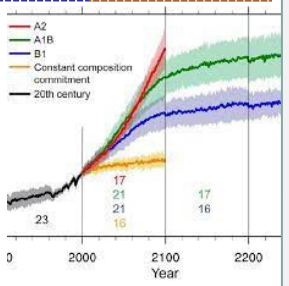
EV Growth

Tracking of every national and strategic account, bulk electrification efforts, and forecasting of potential areas of electrification

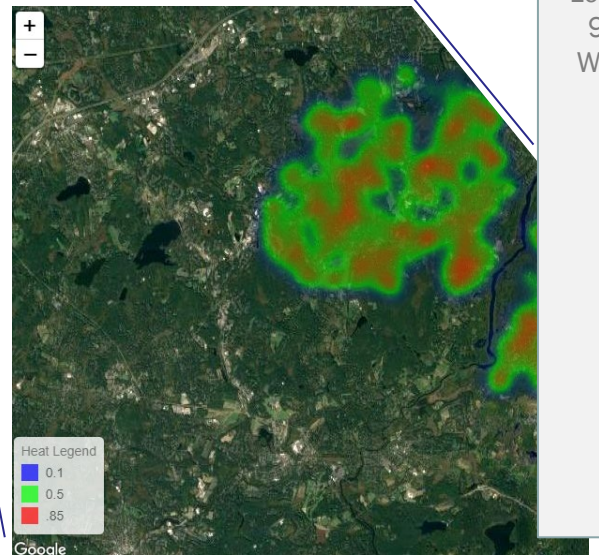


Adoption propensity model based on customer cluster classifications and GPS mobility tracking data

Climate



Climate impact with probability of future heatwaves

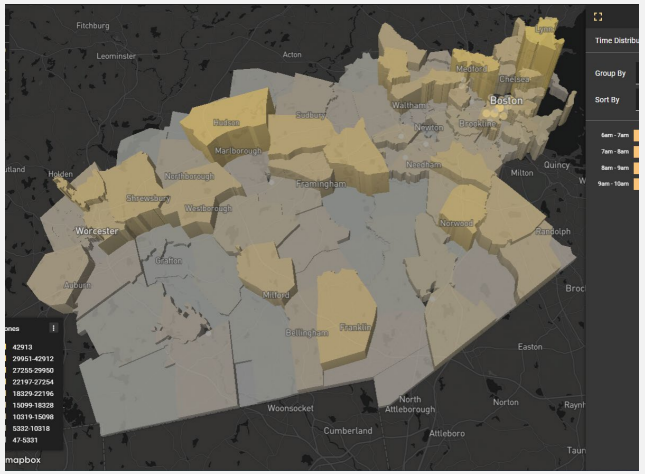


Forecasted Net Station Load with 90/10 Weather

Long Term Electrification Impact Assessment

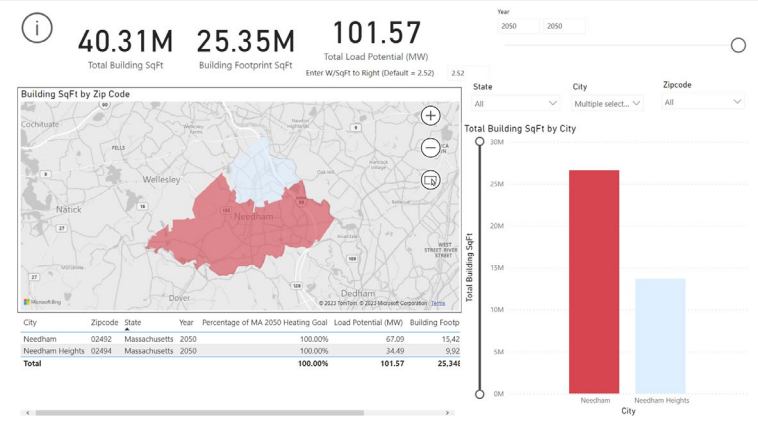
Electric Vehicles

- Customer Specific Adoption Models
- GPS Tracking of Vehicle Movement
- Fleet Electrification tracking



Heat Pumps

- Customer Specific Adoption Models
- Detailed property data based
- Service Level impacts

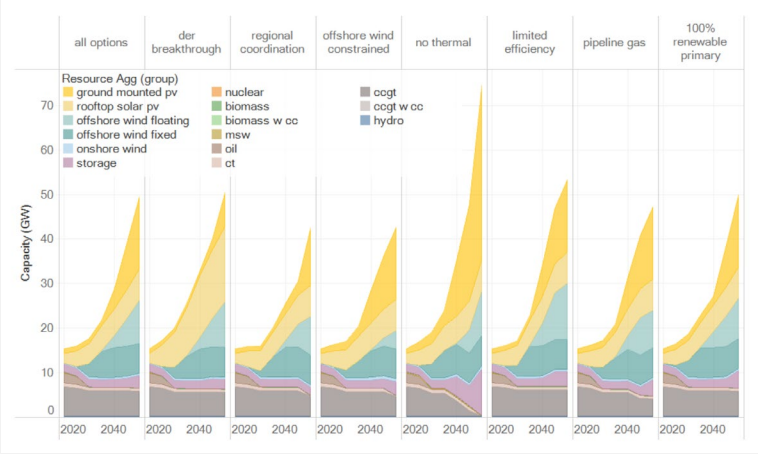


Solar

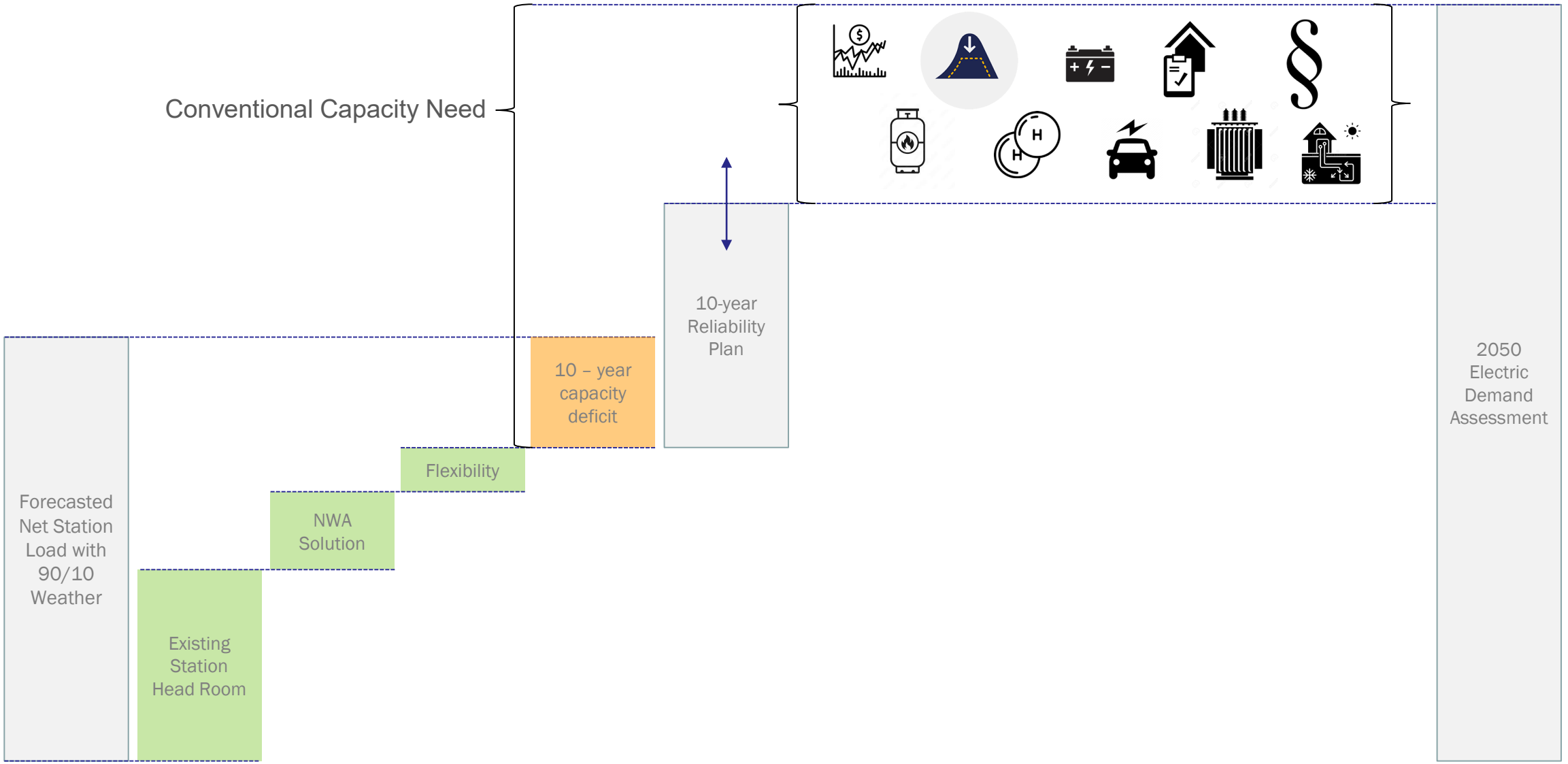
- Territory wide parcel data base
- Econometric models for rooftop and ground mounted solar

2050 Decarbonization Roadmap

- Scenario Evaluation
- Policy Sensitivity Analysis



Solving for the Decarbonized Grid



QUESTIONS

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