Proactive Planning
National Grid

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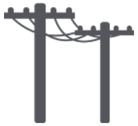
There is a Need to Align Infrastructure Timelines with Customer Upgrades

~6-18 Months to Construct

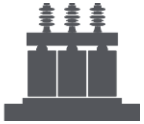
Onsite Upgrades and New Builds

~1-4 Years to Construct



Line Upgrades

~4-8 Years to Construct



Transmission Interconnection and Upgrades

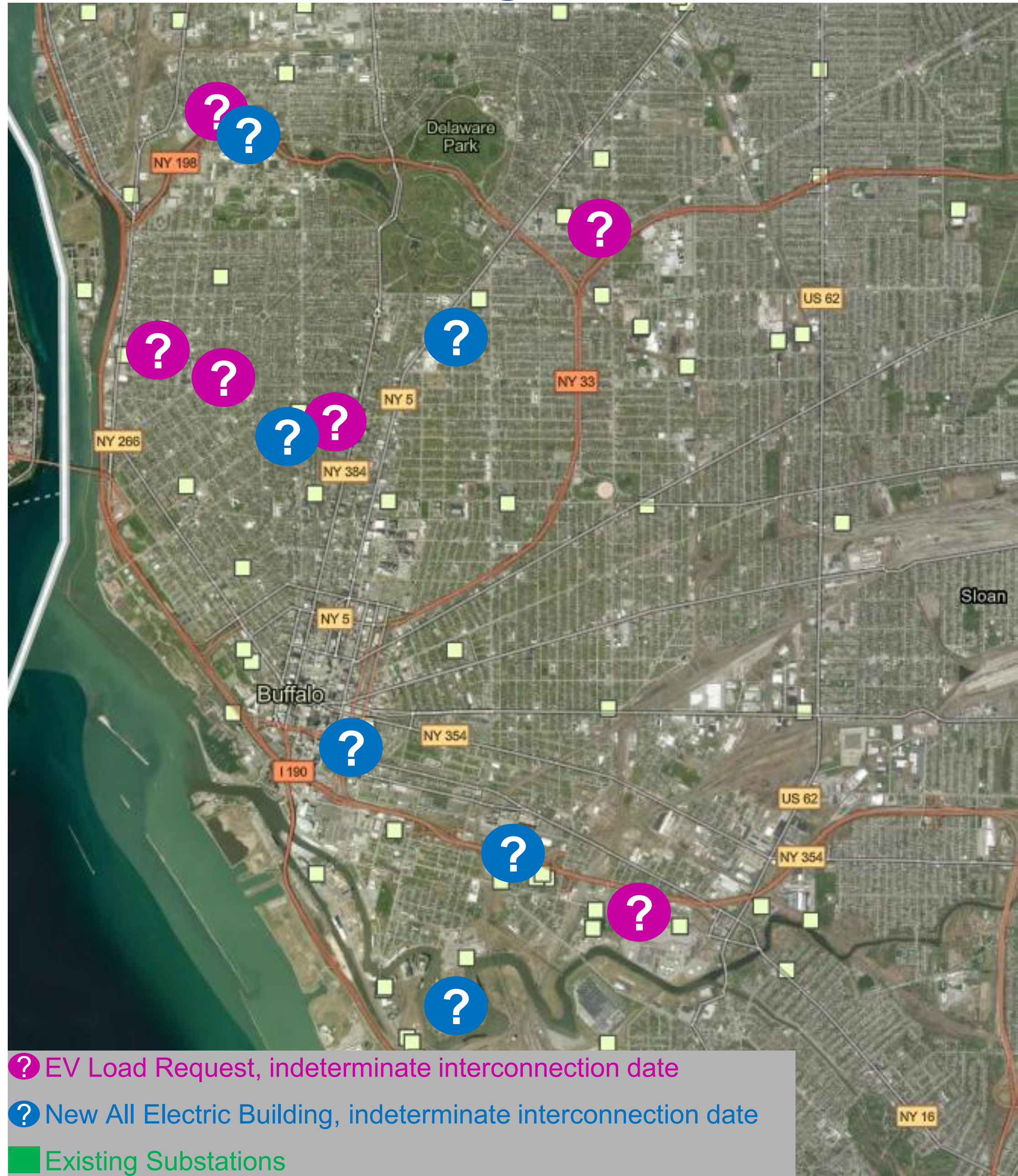
Currently, customer requests outpace the utilities in-service request build times. To properly ensure capacity, service requests often may be delayed in connection, or the utility may take on risk if long term upgrades are not constructed in time.

Area Planning Timing vs Realized Loading

Speculative load requests are known where and size of demand.

However, undetermined timing and final capacity provides challenges of when constraints will take place, and how severe they may be.

When load interconnection requests are officially submitted, the Utility is already behind schedule for alleviated any interconnection constraints



Proactive Planning's "North Star"

Proactive Planning

- Ensure utilities are not the bottleneck in timing and costs
- Specific, Granular Upgrades for known and more speculative loads
- Enable State Goals for Electrification and Decarbonization
- Enable Economic Deployment

Rate Case Planning

- Speculative, address further concerns
- Timing longer term
- Forecasted loading planned in conjunction with other asset management needs

Proactive Planning Identified Categories

Original Project Justifications in 2024 Urgent Projects Filing

Transportation Electrification

- Fleet Electrification
  - Light, Medium, and Heavy Duty Fleet Depots
- Electric School Buses
- Public Charging
- General Customer Adoption

Building Electrification

- Existing Customer Adoption Rates
  - Forecasted, Ad-Hoc Enablement
- New Customer Interconnections
  - Multiple Occupancy Building Developments
  - Economic Development-Induced Load Growth

DER Enablement

- Enable New Interconnections
- Utilize DER/GETs as a solution
  - Forecasting Assumptions
  - NWAs/Flexibility Services
  - Advanced Technologies (GETs)

Economic Development

- Large Transmission Loads
  - Transmission System Focus
- Forecasted Economic Area Growth
- Existing Customer Expansion

Standardized Approach to Forecasting

BAU Forecasting relies on system-wide assumptions and may not utilize site-specific, granular data

"BAU" Forecasting

- General Load Growth
- EV Adoption
- Heat Pump Adoption
- DER Interconnections

+

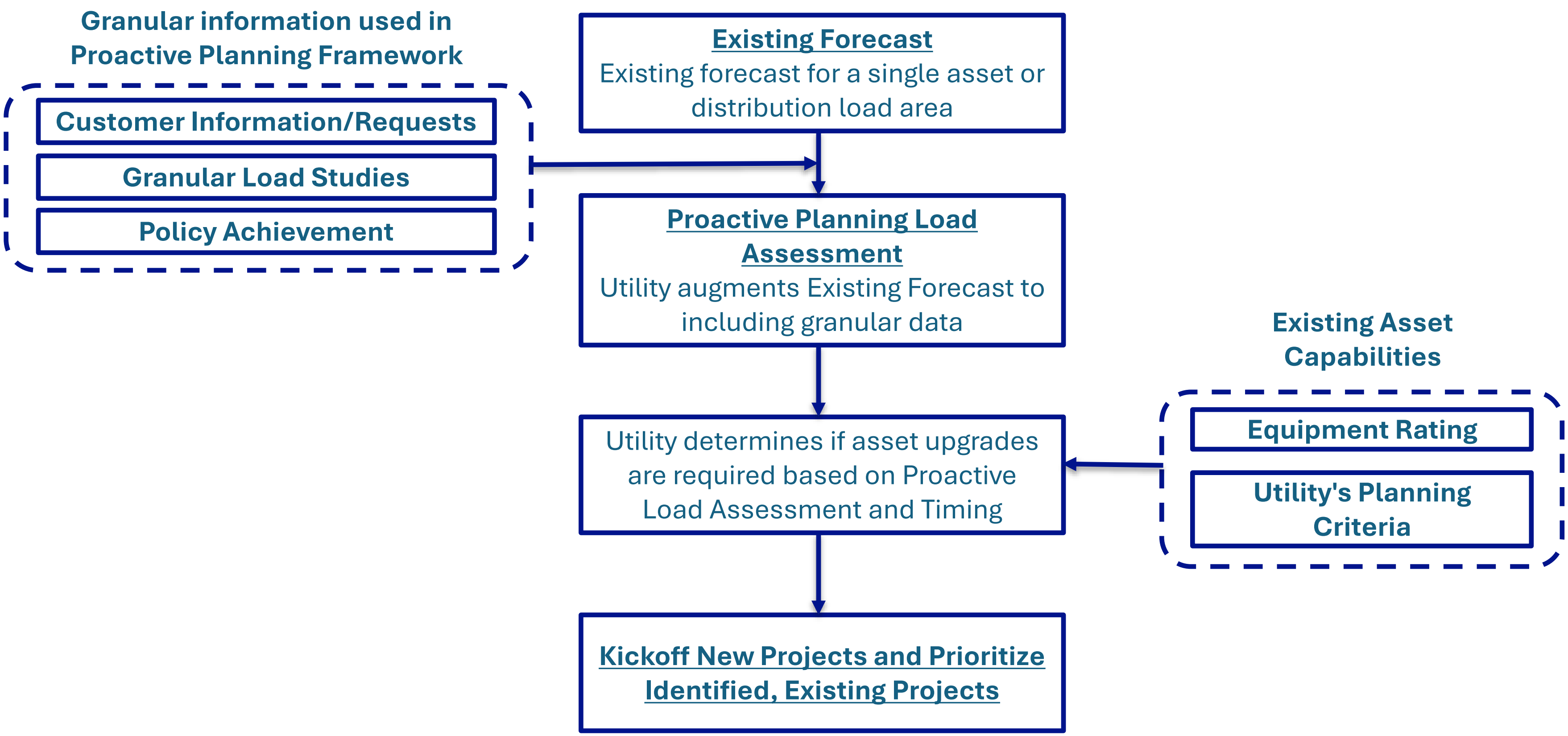
Granular Data

- Transportation Electrification
- Building Electrification
- Economic Development
- DER Integration

"Proactive" Granular Forecast

Granular information from speculative interconnections and 3rd party evaluations drive new forecasting assumptions that may be utilized for

Utilities will use granular information to augment existing forecasts and create Proactive Planning Load Assessments



Planning Considerations

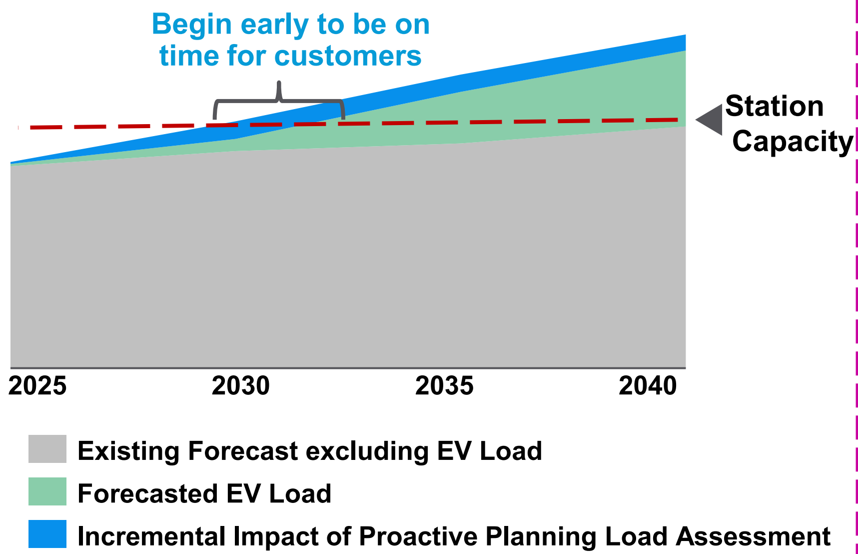
Right-Sizing of Projects:

Ensure projects are not overbuilding, while enabling additional capacity for future use cases.

"**Balancing Act**" of avoid overbuilding vs. optimizing marginal capacity for marginal cost

Example: Marginal cost increased for larger transformer is minimal compared to capacity (e.g. 20 MVA vs 40 MVA is virtually a material cost difference)

Illustrative example



Inhibit Free-Ridership of Projects:

Any proactive planning projects may enable large customers utilizing new capacity, including both DER and Large Load customers.

Learning from other state proceedings and utilities on their frameworks and proceedings.

Enabling larger capacities may incentive new growth while lowering barrier to pay for upgrades.

$$\frac{\text{Cost of Upgrade (\$)}}{\text{Capacity of Upgrade (MW)}} \times \text{Large Customer Capacity Req. (MW)}$$

=

Large Customer Interconnection Costs applicable for CIAC/Cost-Share ($)

Project Example: Angola Rest Stop

NY Thruway along I-90 is looking to expand its rest stop charging capabilities. In doing so, sites such as Angola's Rest Sop are seeking to develop a phased rollout of charging for Light, Medium, and Heavy-Duty Vehicles

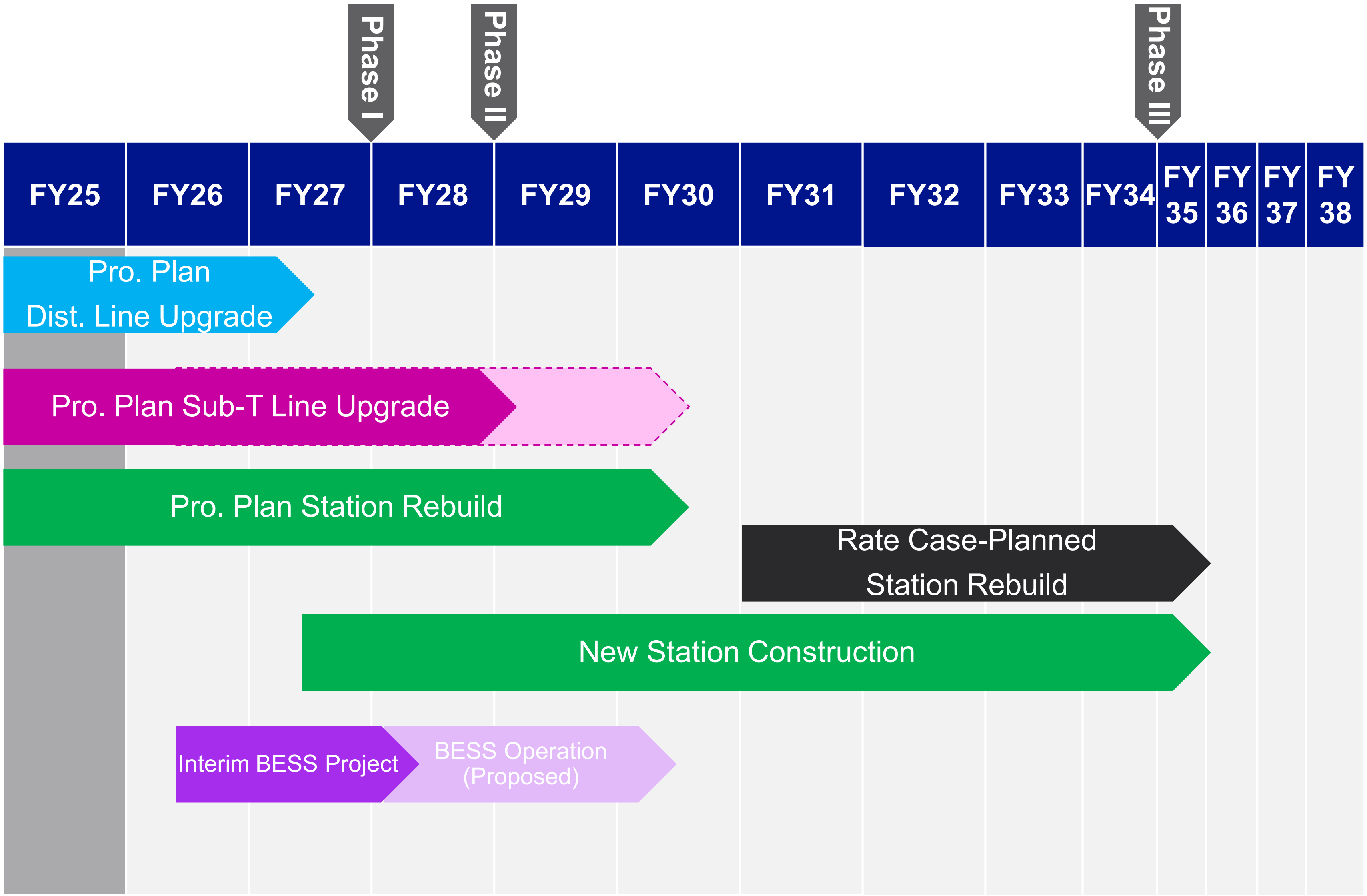
MHDV EV Charging

Light-Duty EV Charging

Exceeds 95%
Exceeds 100%
Exceeds 200%

				2024 Data	Rest Stop Phase I Data	Rest Stop Phase II Data	Rest Stop Phase III Data
Substation Transformer	**Voltages (kV)**	**Nameplate (MVA)**	**SN / WN (MVA)**	**Peak Load (%SN)**	**Peak Load (%SN)**	**Peak Load (%SN)**	**Peak Load (%SN)**
Station Tx	115 / 13.2	25	30.2	77%	97%	106%	201%
Feeder 1	13.2	-	8.44	43%	-		
Feeder 2	13.2	-	8.44	48%	97%	135%	476%
Feeder 3	13.2	-	8.44	90%	-		
Feeder 4	13.2	-	11.66	74%	-		

Proactive Planning Solution to Rest Stop Load Requests



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