Department of Public Service

Three Empire State Plaza, Albany, NY 12223-1350
www.dps.ny.gov

June 21, 2024

Hon. Michelle Phillips
Secretary to the Commission
New York State Public Service Commission
Three Empire State Plaza
Albany, NY 12223-1350

Re: Case 20-E-0197 – Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act.

Dear Secretary Phillips:

A recording of the June 17, 2024 Energy Policy Planning Advisory Council (EPPAC) meeting is available at: https://youtu.be/BCIFN7xrgrQ. Materials from the meeting are attached.

Questions concerning the EPPAC should be directed to EPPAC@dps.ny.gov.

Sincerely,
Jalila Aissi
Assistant Counsel

State Scenario Results

NYISO Staff

Long Term Assessments

Energy Policy Planning Advisory Council (EPPAC)

June 17, 2024

Agenda

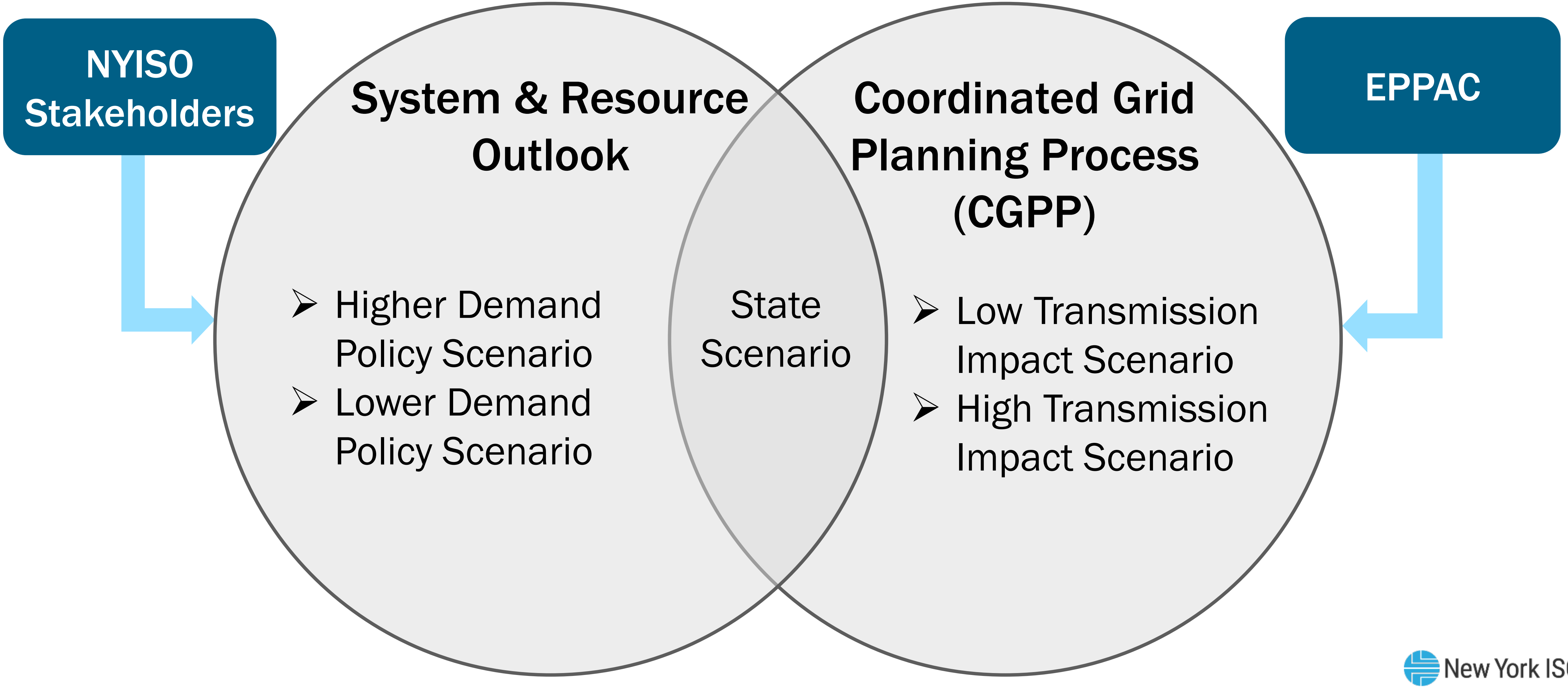
- NYISO Outlook & CGPP Coordination
- State Scenario Updates Since Last EPPAC
- State Scenario Results – NYCA & Zonal

State Scenario Assumptions

- **This slide provides a high-level summary of key State Scenario assumptions**
  - Energy demand and peak loads are based on the “Scenario 2” forecast from the Climate Action Council (CaC) Integration Analysis with additional large loads and electrolysis load
    - Large Loads in the 2023 Gold Book baseline forecast incremental to state modeling forecasts are included in the load forecast
    - Half of economy wide H_2 demand met by in-state electrolysis which increases load
  - Sub-zonal constraints model estimated transmission headroom of local transmission and distribution system and marginal upgrade costs
  - Load portion of formula for calculating the achievement of 70x30 includes electrolysis and net storage charge
  - Net zero annual NYCA imports start in 2040
  - Age-based fossil retirements for existing units are assumed
  - New and retrofit hydrogen-powered combustion turbines are the only candidate dispatchable emission-free resource (DEFR) option
    - Corresponding increases in electrolysis load in Zones A-E
    - High operating cost to run the hydrogen-powered units
  - Capital costs for candidate renewable resources are assumed by technology type per NYSERDA Supply Curve Analysis

New York ISO

NYISO Outlook & CGPP Coordination



State Scenario Updates Since Last EPPAC

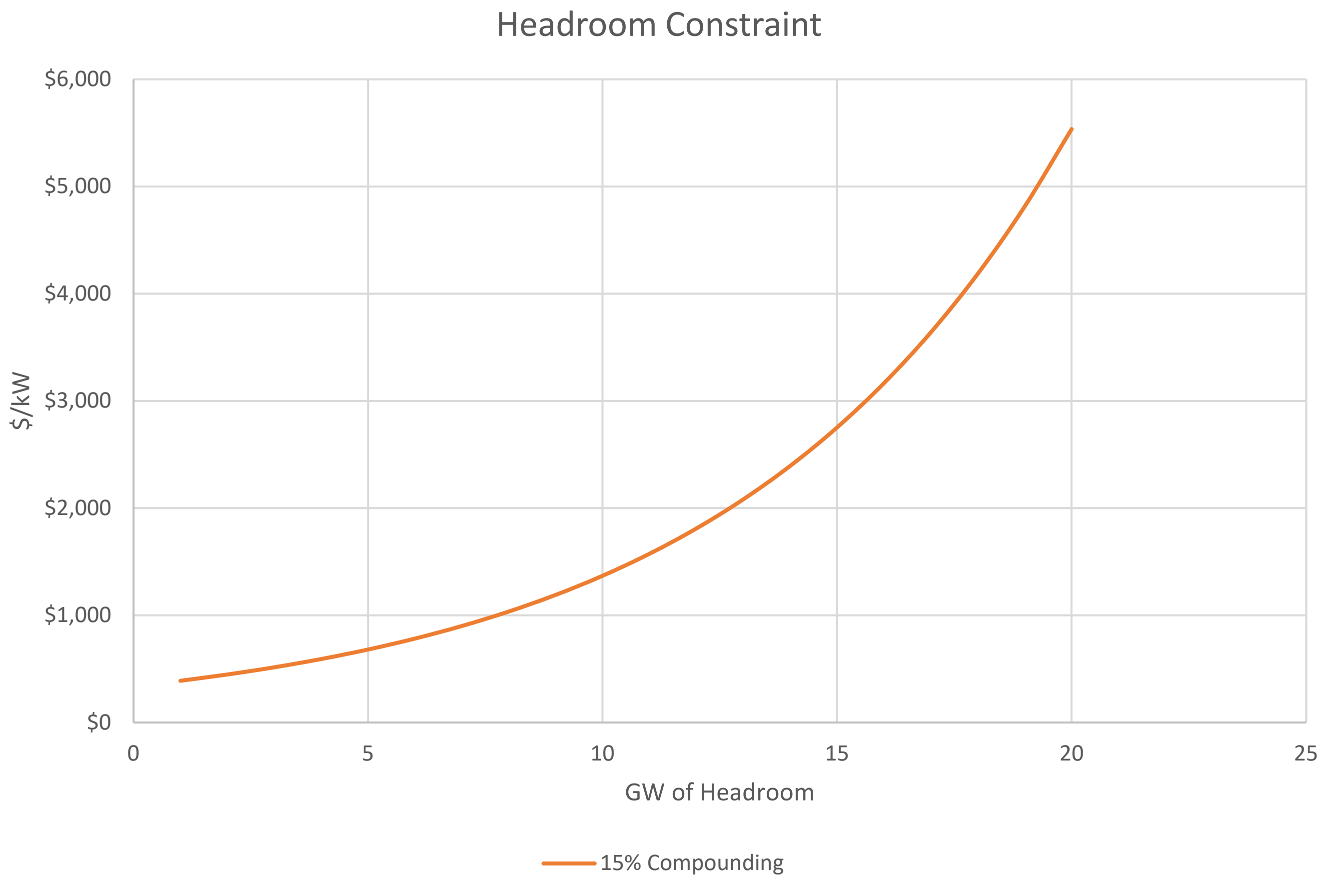
- **For the State Scenario, DPS staff designated the use of a 15% compounding cost for every additional 1 GW of incremental headroom required in a zone**
  - The updated State Scenario results include this assumption
  - This assumption leads to increased distribution of new generation capacity from the capacity expansion model on a zonal basis
- **Overall, the NYCA-level trends remain consistent with previously presented results at 4/15/2024 EPPAC**

New York ISO

15% Headroom Cost Assumption

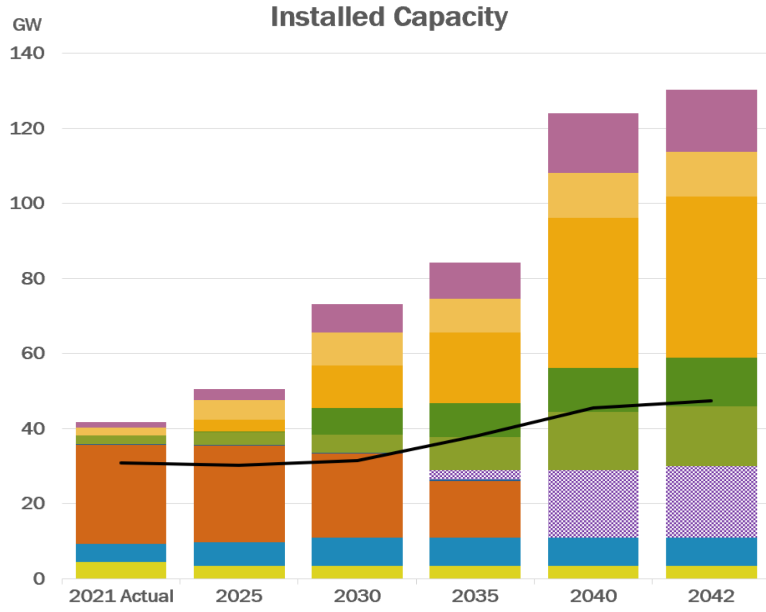
Headroom (GW)	15% Compounding	
1	$389	1.00
2	$447	1.15
3	$514	1.32
4	$592	1.52
5	$680	1.75
6	$782	2.01
7	$900	2.31
8	$1,035	2.66
9	$1,190	3.06
10	$1,368	3.52
11	$1,574	4.05
12	$1,810	4.65
13	$2,081	5.35
14	$2,393	6.15
15	$2,752	7.08
16	$3,165	8.14
17	$3,640	9.36
18	$4,186	10.76
19	$4,814	12.38
20	$5,536	14.23

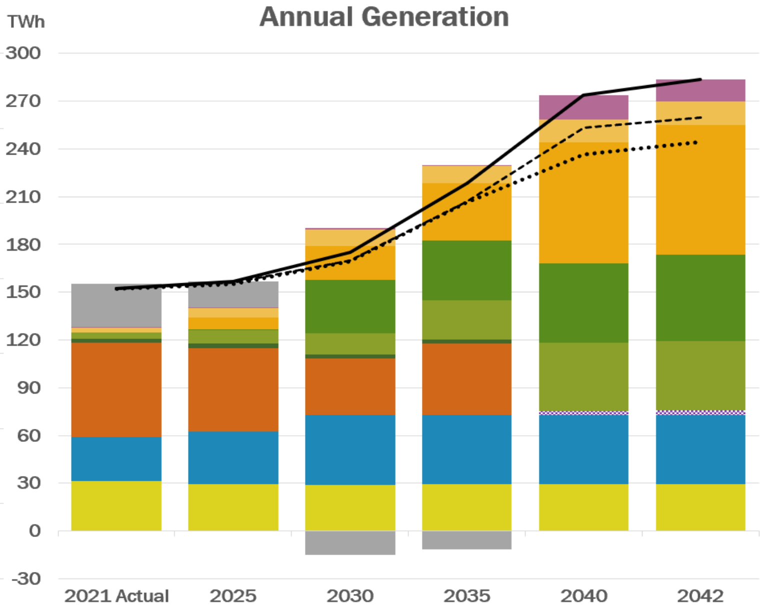
*model will add inflation

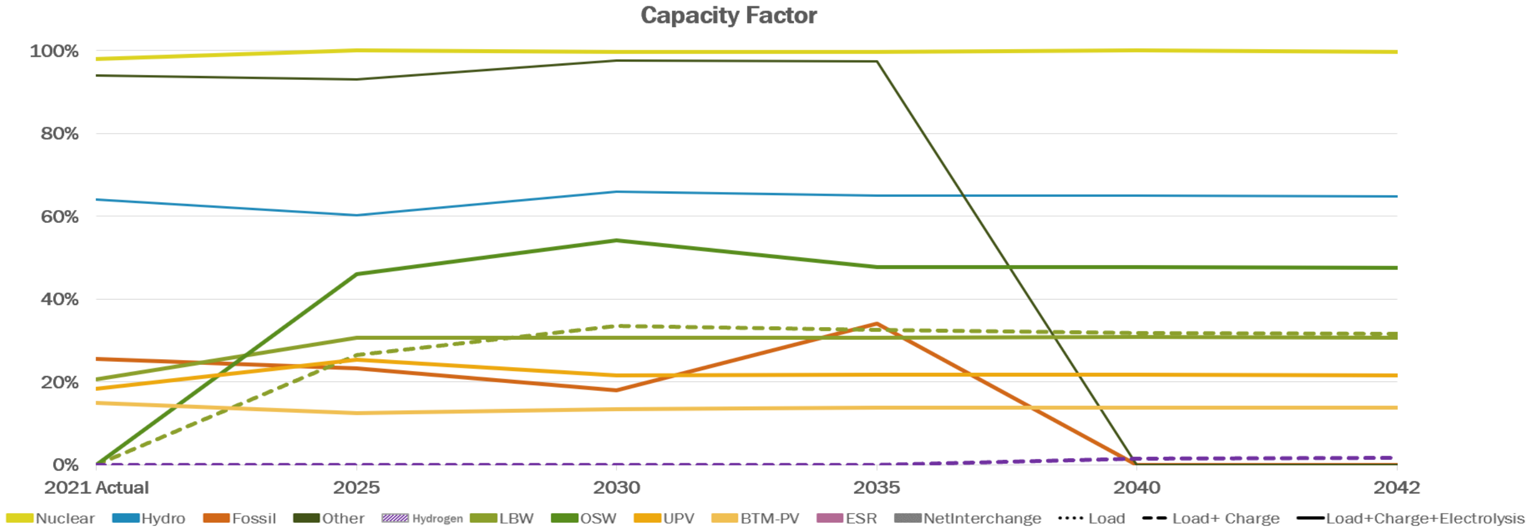


State Scenario Results

State Scenario Policy Case Results: 15% Compounding Headroom







Capacity (Summer MW)	2021	2025	2030	2035	2040	2042
Nuclear	4,378	3,342	3,342	3,342	3,342	3,342
Fossil	26,345	25,753	22,424	15,022	-	-
Hydrogen - New CC	-	-	-	-	-	-
Hydrogen - New CT	-	-	-	-	3,062	3,244
Hydrogen - Retrofit CC	-	-	-	-	10,273	11,183
Hydrogen - Retrofit CT	-	-	-	2,676	4,558	4,558
Hydro	4,868	6,294	7,544	7,665	7,665	7,665
LBW	2,227	3,291	4,815	8,658	15,549	15,819
OSW	-	136	6,990	9,000	11,809	13,048
UPV	32	3,135	11,265	18,963	39,903	42,903
BTM-PV	2,116	5,384	8,972	8,973	12,019	12,019
Storage	1,405	2,905	7,405	9,678	15,729	16,503
Total	41,686	50,562	73,080	84,299	123,909	130,285
Annual Peak (MW)	30,397	29,568	29,861	37,047	45,062	47,046

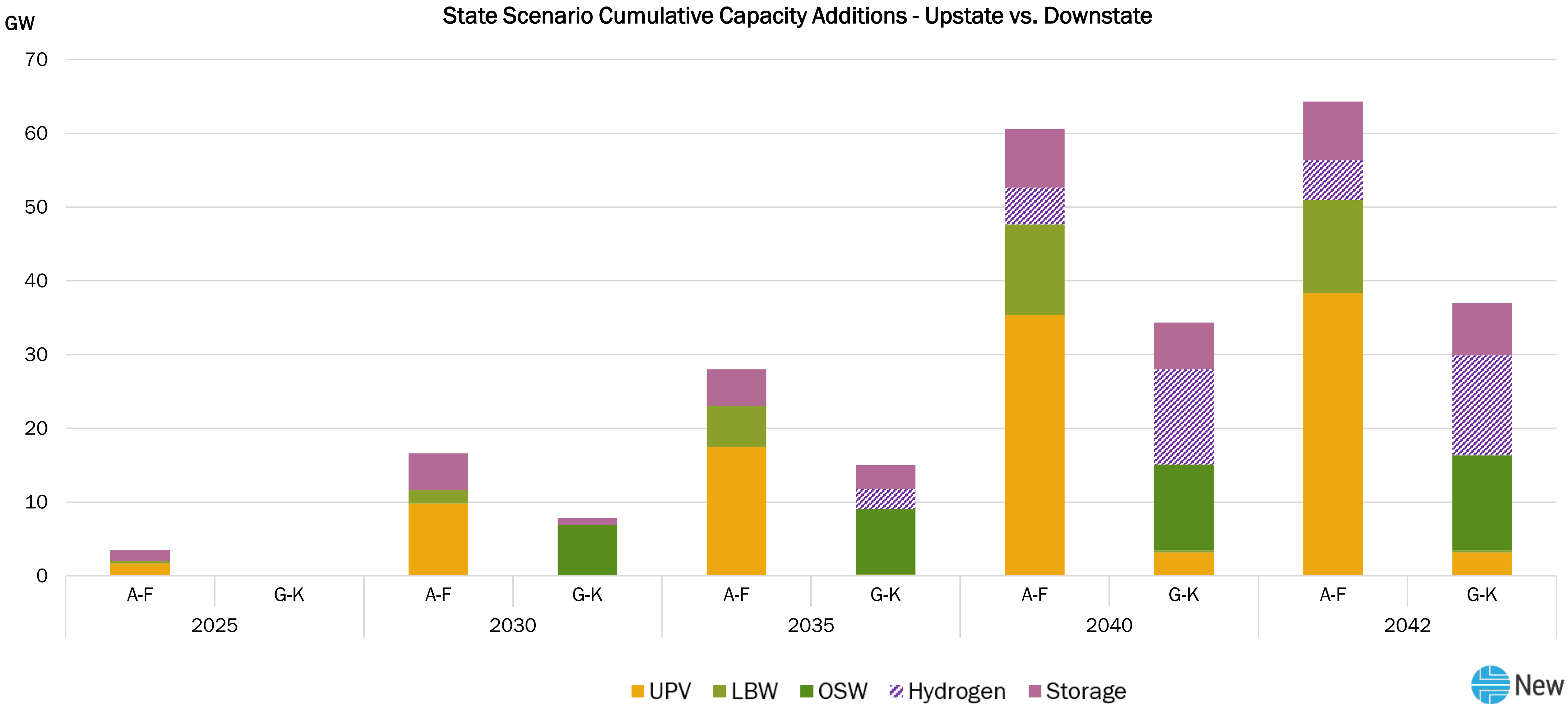
Generation (GWh)	2021	2025	2030	2035	2040	2042
Nuclear	31,609	29,276	29,174	29,191	29,315	29,208
Fossil	59,154	52,440	35,452	44,927	-	-
Hydrogen - New CC	-	-	-	-	-	-
Hydrogen - New CT	-	-	-	-	9	3
Hydrogen - Retrofit CC	-	-	-	-	2,330	2,896
Hydrogen - Retrofit CT	-	-	-	-	3	8
Hydro	27,379	33,263	43,608	43,615	43,667	43,493
LBW	4,024	8,747	13,423	24,279	43,158	43,718
OSW	-	549	33,182	37,613	49,508	54,421
UPV	51	6,987	21,380	36,059	76,089	81,473
BTM-PV	2,761	5,871	10,610	10,812	14,589	14,648
Storage	355	903	532	662	15,171	13,739
Total Generation	127,930	140,771	191,192	232,425	278,392	288,901
RE Generation	34,570	56,320	122,736	153,041	242,182	251,491
ZE Generation	66,179	85,596	151,910	182,232	273,840	283,606
Net Interchange	27,222	16,060	(15,011)	(11,568)	-	-
Load	151,979	154,839	169,374	206,351	236,258	244,484
Load+Charge	152,334	155,837	169,837	206,958	253,100	259,634
Load+Charge+Electrolysis	152,334	156,730	175,110	218,349	273,840	283,606
Load Flexed by EV's	-	100	1,070	2,508	4,553	5,295
% RE [RE/Load+Charge]	23%	36%	70%	70%	88%	89%
% ZE [ZE/(Load+Charge)]	43%	55%	87%	83%	100%	100%

Emissions (million tons)	2021	2025	2030	2035	2040	2042
CO_2 Emissions	22.24	22.17	14.86	18.98	-	-

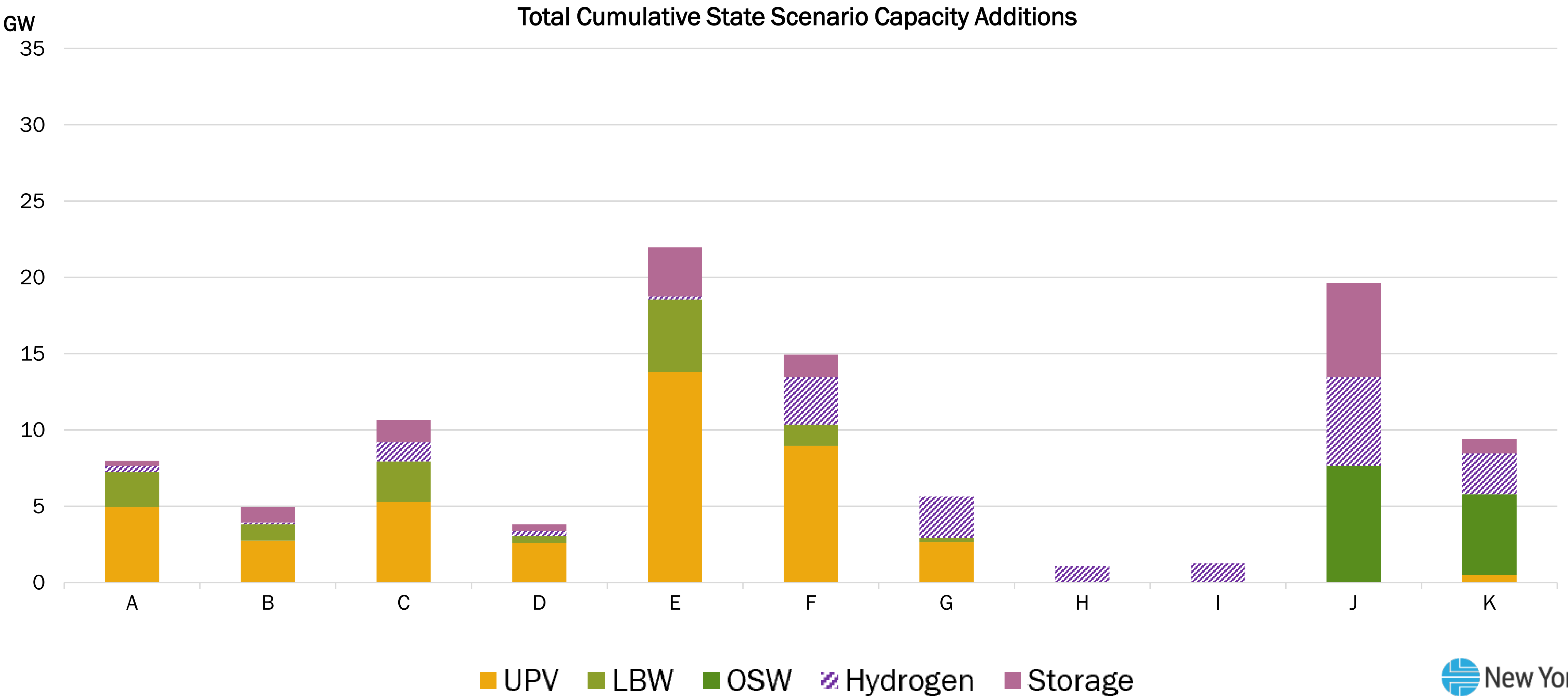
* Storage includes Pumped Storage Hydro and Batteries
* Utility solar (UPV) includes existing (77 MW) and new UPV
* Hydro includes hydro imports from Hydro Quebec
* Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
* Dispachable Emission Free Resource (DEFR)
* Net Interchange is reported relative to New York (imports +, exports -)
* CO2 emissions increase between 2030 and 2035 due to increased fossil generation

New York ISO

Cumulative Capacity Additions – Upstate vs. Downstate

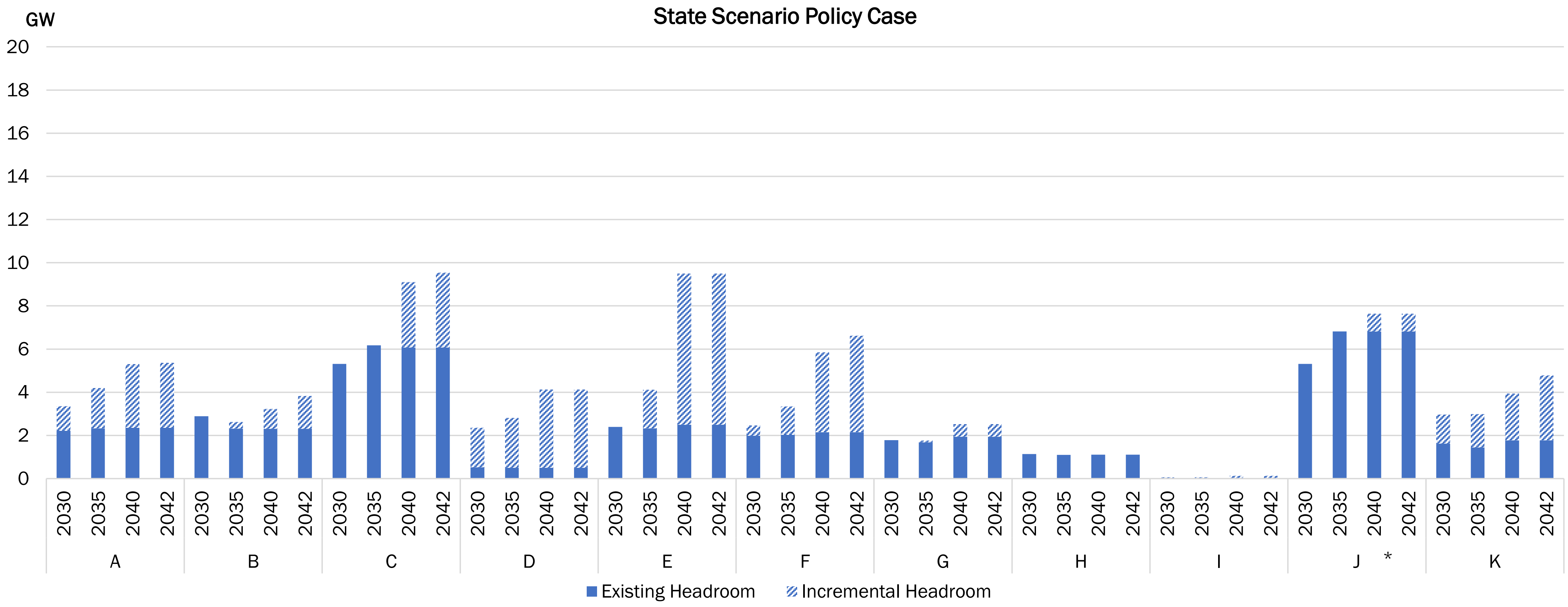


Cumulative Zonal Capacity Additions – 2042



New York ISO

Headroom Existing vs. Incremental



Incremental headroom = headroom added by model

*Headroom within zone J represents incremental installed OSW capacity

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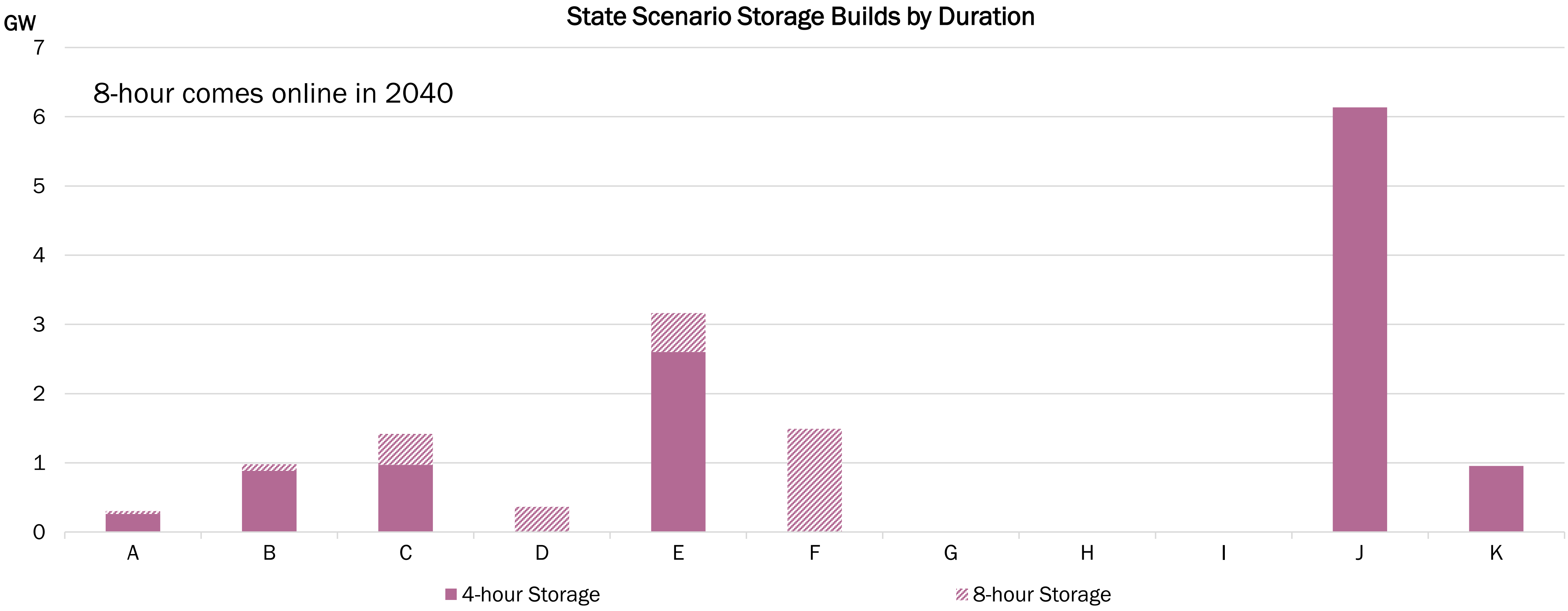
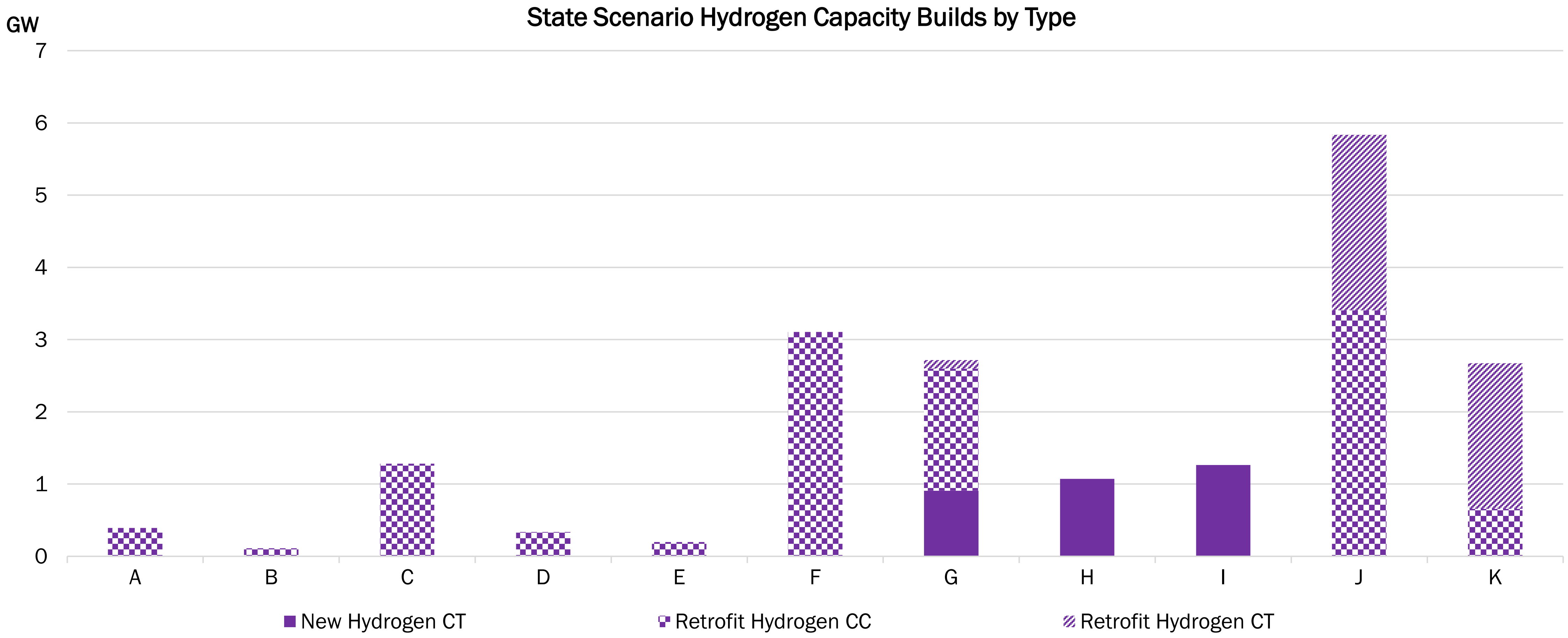
Storage by Type - 4-hour vs. 8-hour (2042)



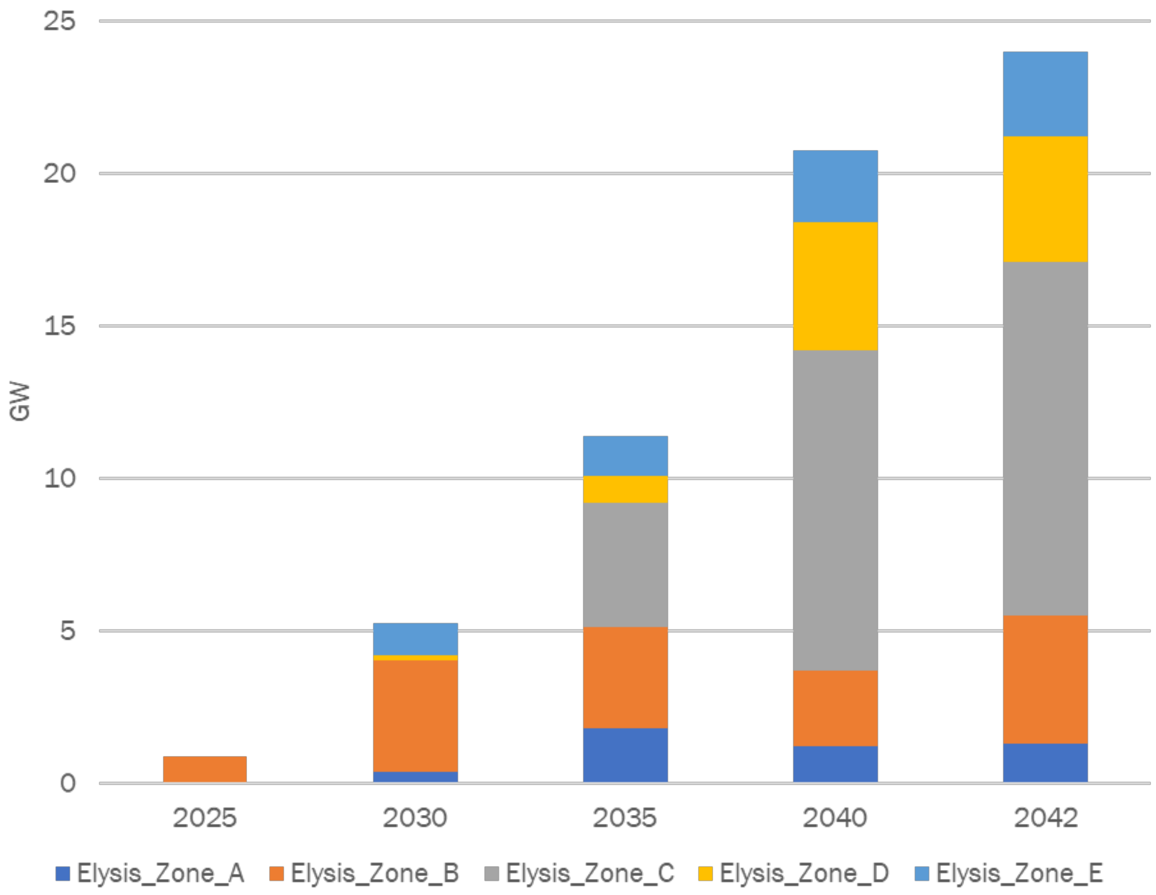
Candidate battery builds only, 0.24 GW of Contract capacity not shown here

Zonal Hydrogen Build by Type (2042)



Candidate builds only, no Contract builds in model

Electrolysis Load by Zone



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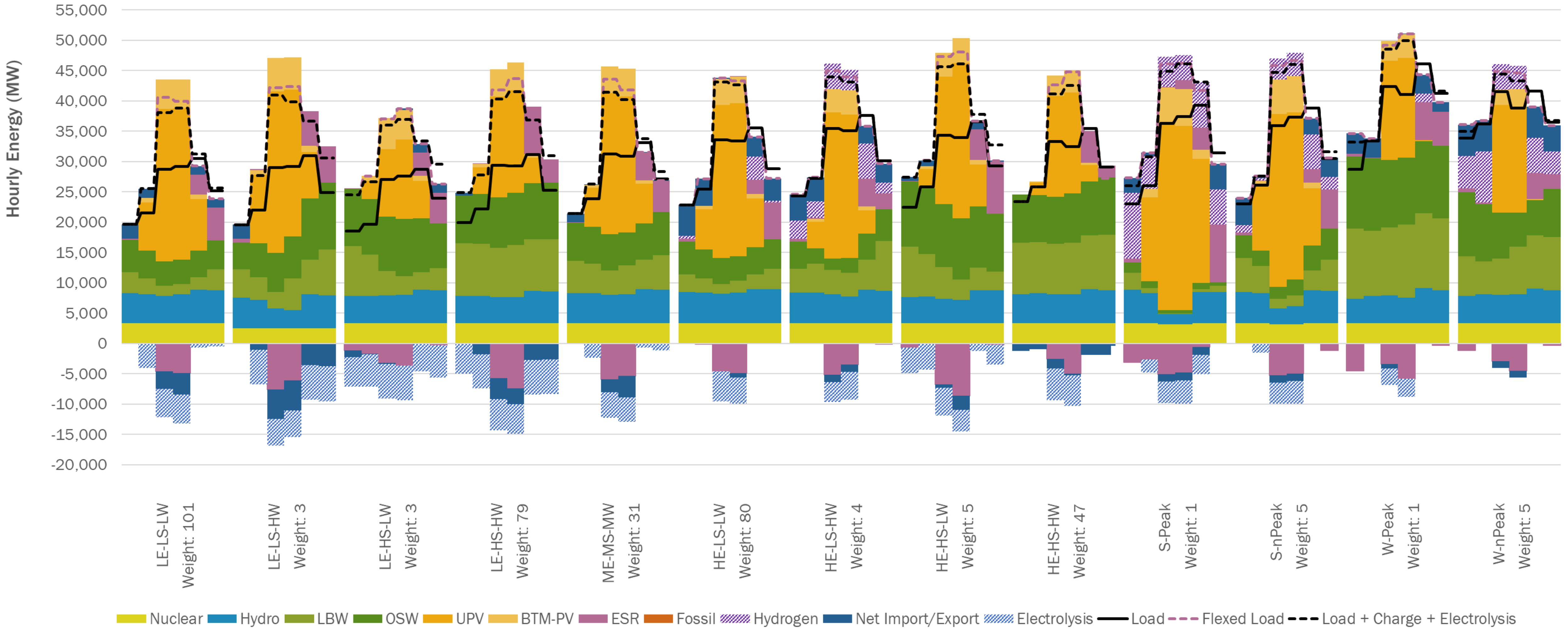
Model Generation on Representative Days in 2042



Appendix

Model Changes Since 3/1/24

- **Changed mathematical formula for calculating the achievement of 70x30**
  - $$\frac{Renewable\ generation}{Load\ forecast\ (provided\ by\ state\ team) + electrloysis\ load + net\ storage\ load}$$
- **Changed large load assumptions from Higher Demand forecast to Baseline forecast from 2023 Gold Book, excluding WNY Stamp and Air Products to prevent double counting as they are already captured in base load profiles**
- **Assumed Champlain Hudson Power Express (CHPE) to contribute to the achievement of 70x30**
- **Implemented constraint to limit growth of utility-scale solar**
  - 2.5 GW/year through 2040, 3 GW/year beyond 2040
  - Implemented as a cumulative limit (more than 2.5 GW are allowed to build in a single year but cannot exceed the annual limit on total UPV)
    - Reminder that UPV doesn't build until 2028 per Outlook assumptions matrix

New York ISO

Flexible EV Load Methodology

- **NYSERDA has provided peak load data from the Integration Analysis that quantifies the impact of flexible loads**
  - This flexible load is modeled in the capacity expansion model as a battery object with full firm capacity
    - The change in peak from “With Medium End-Use Flexibility” and “Without End-Use Flexibility” is assumed to be the max potential (battery max power) for load shifting
      - » The model uses the average of the seasonal values
    - The energy is assumed to be a 4-hour capability
    - NYCA total is distributed zonally based on data provided by NYSERDA/E3

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Summer Peak (GW)	With High End-Use Flexibility	30.27	29.95	29.60	29.24	28.87	28.54	28.36	28.27	28.23	28.26	28.11	28.63	29.15	29.69	30.23	30.83	31.41	31.96	32.49	32.98	33.44	33.87	34.26
Winter Peak (GW)	With High End-Use Flexibility	22.30	21.93	21.50	21.11	20.86	20.81	21.06	21.73	22.71	23.90	25.01	26.76	28.48	30.33	32.26	34.14	35.80	37.35	38.76	40.04	41.17	42.15	42.99
Summer Peak (GW)	With Medium End-Use Flexibility	30.27	29.95	29.60	29.24	28.87	28.54	28.36	28.27	28.23	28.26	28.34	28.89	29.45	30.03	30.60	31.19	31.75	32.33	32.89	33.41	33.89	34.35	34.77
Winter Peak (GW)	With Medium End-Use Flexibility	22.30	21.93	21.50	21.11	20.86	20.81	21.06	21.73	22.71	23.90	25.27	27.08	28.86	30.86	32.88	34.85	36.60	38.25	39.77	41.15	42.39	43.47	44.41
Summer Peak (GW)	Without End-Use Flexibility	30.27	29.95	29.61	29.26	28.90	28.59	28.44	28.41	28.45	28.58	28.80	29.49	30.19	30.98	31.89	32.86	33.73	34.59	35.43	36.25	37.02	37.77	38.48
Winter Peak (GW)	Without End-Use Flexibility	22.31	21.94	21.51	21.13	20.90	20.87	21.18	21.92	23.02	24.35	25.90	27.89	29.87	31.85	33.96	36.12	38.07	39.92	41.65	43.25	44.70	46.00	47.18
Summer	Summer Difference in MW	1.00	2.80	6.15	14.93	27.21	48.45	83.80	141.53	221.47	326.39	458.90	592.22	738.32	951.18	1,287.39	1,670.43	1,979.99	2,258.81	2,545.99	2,837.96	3,131.17	3,423.12	3,711.47
Winter	Winter Difference in MW	1.63	4.55	10.01	20.44	37.25	66.33	114.71	193.75	303.18	446.81	628.21	810.71	1,010.71	982.43	1,083.04	1,267.33	1,465.99	1,672.43	1,885.06	2,101.23	2,318.32	2,534.49	2,766.03

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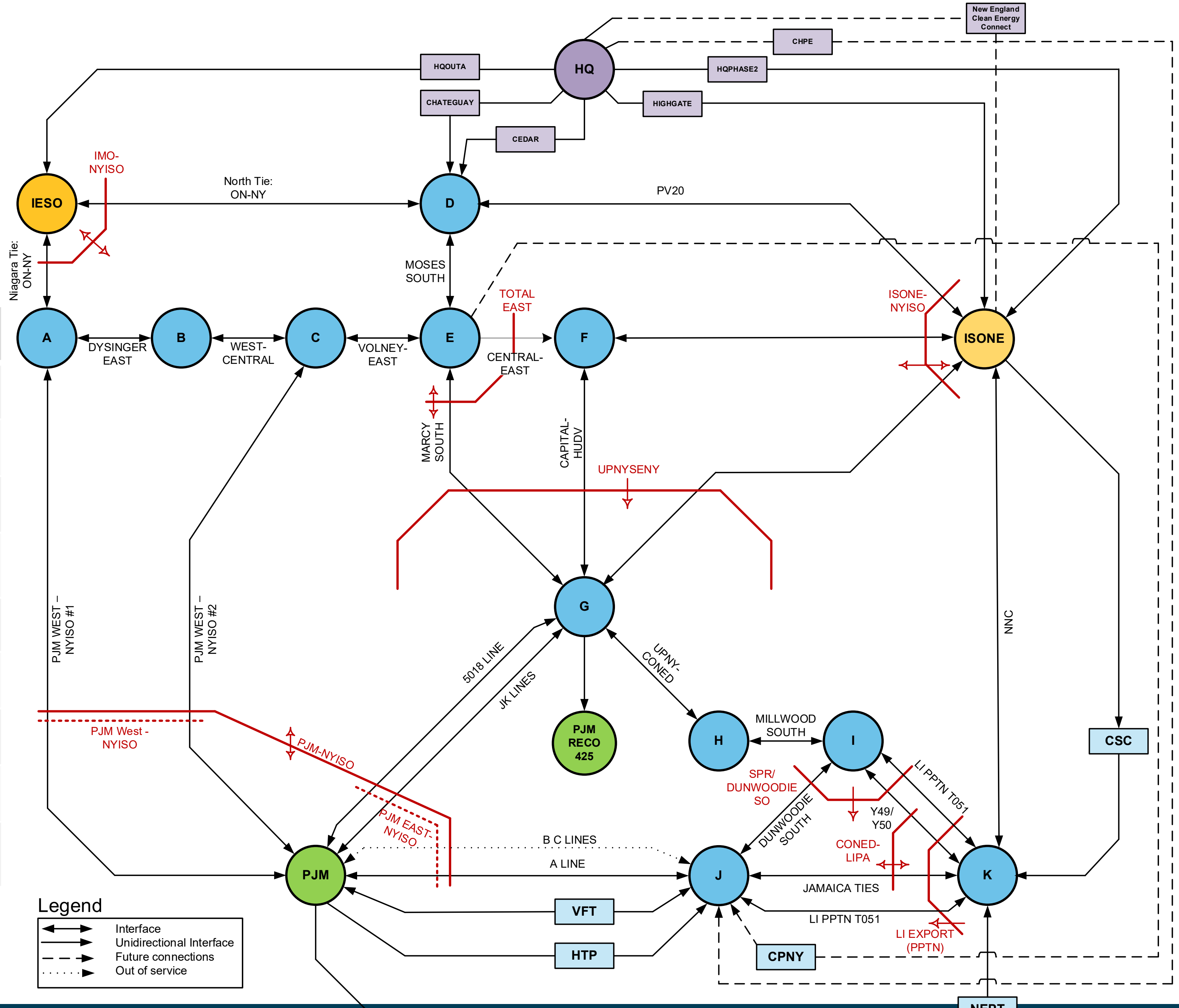
Capacity Expansion Model: Pipe & Bubble Representation

Interface	2023 Limits (MW)	Source
Dysinger East	1700	2020 ATR
West Central	575	2020 ATR
Moses South*	2325	2020 ATR
Central East	3785	2023 Central East Voltage Limit Study
Total East	6175	2020 ATR
UPNY-SENY	6325	2020 ATR
UPNY-ConEd*	7500	2020 ATR
Clean Path New York	1300	NYSERDA Contract
Champlain Hudson Power Express	1250	NYSERDA Contract

*Interface limits are assumed to increase through study period consistent with proposed project upgrades



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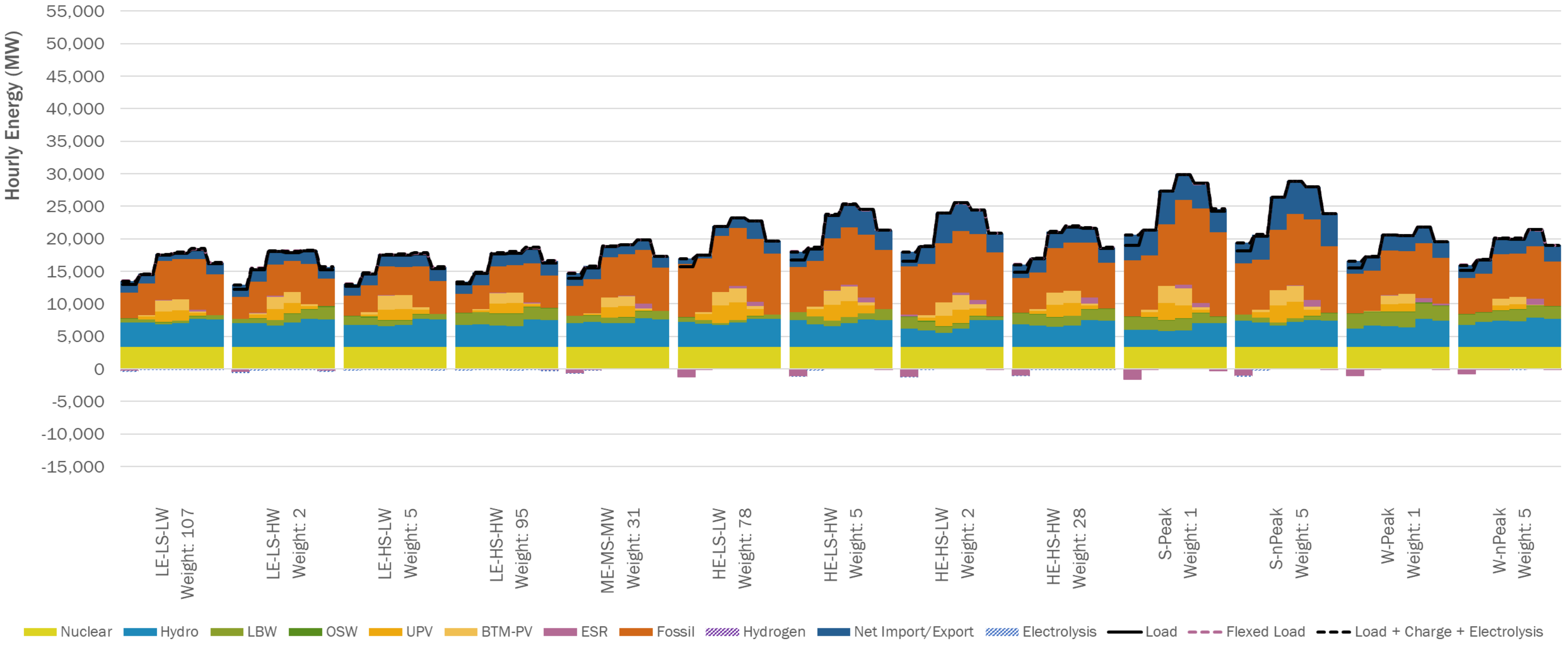
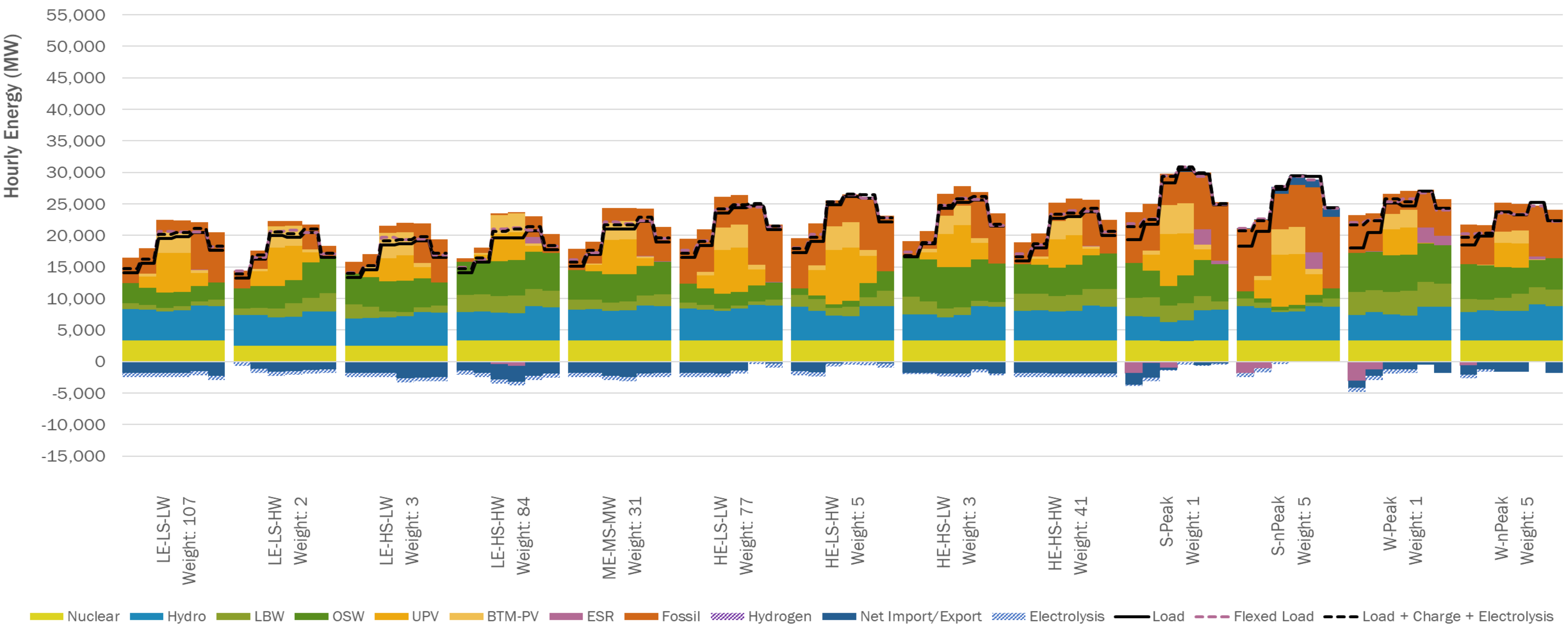
Representative Days Overview

- For the 2023-2042 Outlook, each model year is comprised of 13 representative days to represent a year's variety of conditions
- The 13 representative days per year are designed as follows:
  - The first 9 groups describe the combinations of energy, wind, and solar performance
    - For example, "LE-LS-HW" means that days in that group have below average (low) energy demand and below average (low) solar capacity factor but above average (high) wind capacity factor. ME-MS-MW is the moderate day of all three qualities.
  - The other 4 groups are the peaks and near-peaks for the summer and winter seasons
- Interpreting the representative days figures:
  - Solid black line indicates NYCA-wide load
  - Dashed black line indicates NYCA-wide load plus the inclusion of battery charging and electrolysis
  - Dashed pink line indicates periods when EV load is being flexed. Where this dashed pink line is above the black lines, load is being added. Where this line is below the black lines, load is being reduced.
  - When generation is over an above all load lines, this indicates that NYCA is exporting energy.

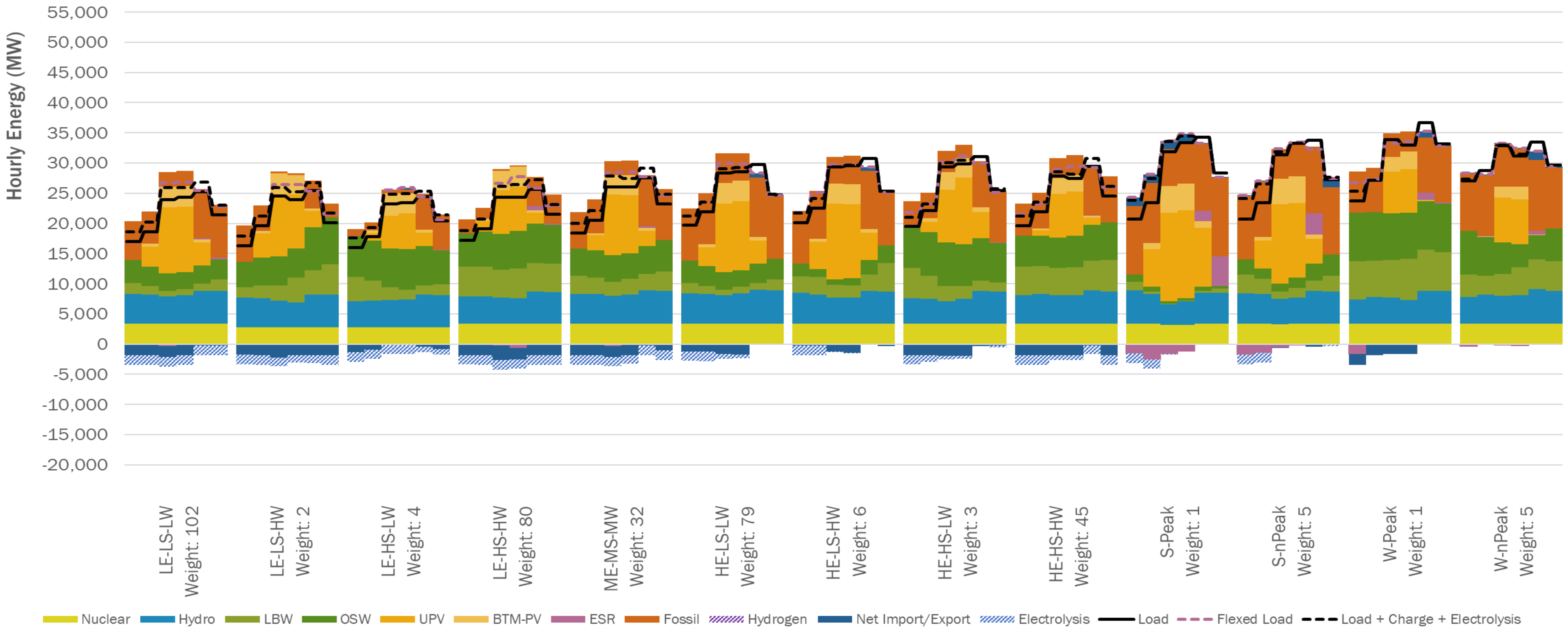
Model Generation on Representative Days in 2025



Model Generation on Representative Days in 2030



Model Generation on Representative Days in 2035



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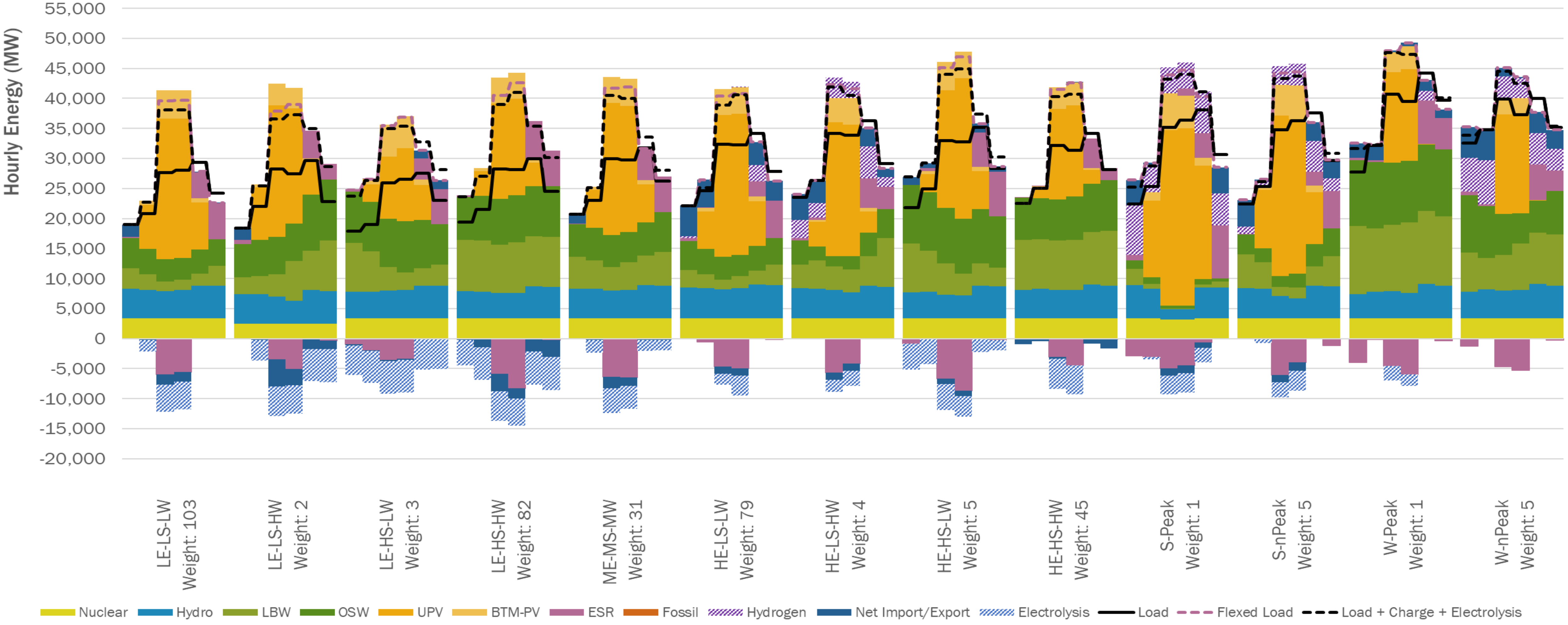
Model Generation on Representative Days in 2040



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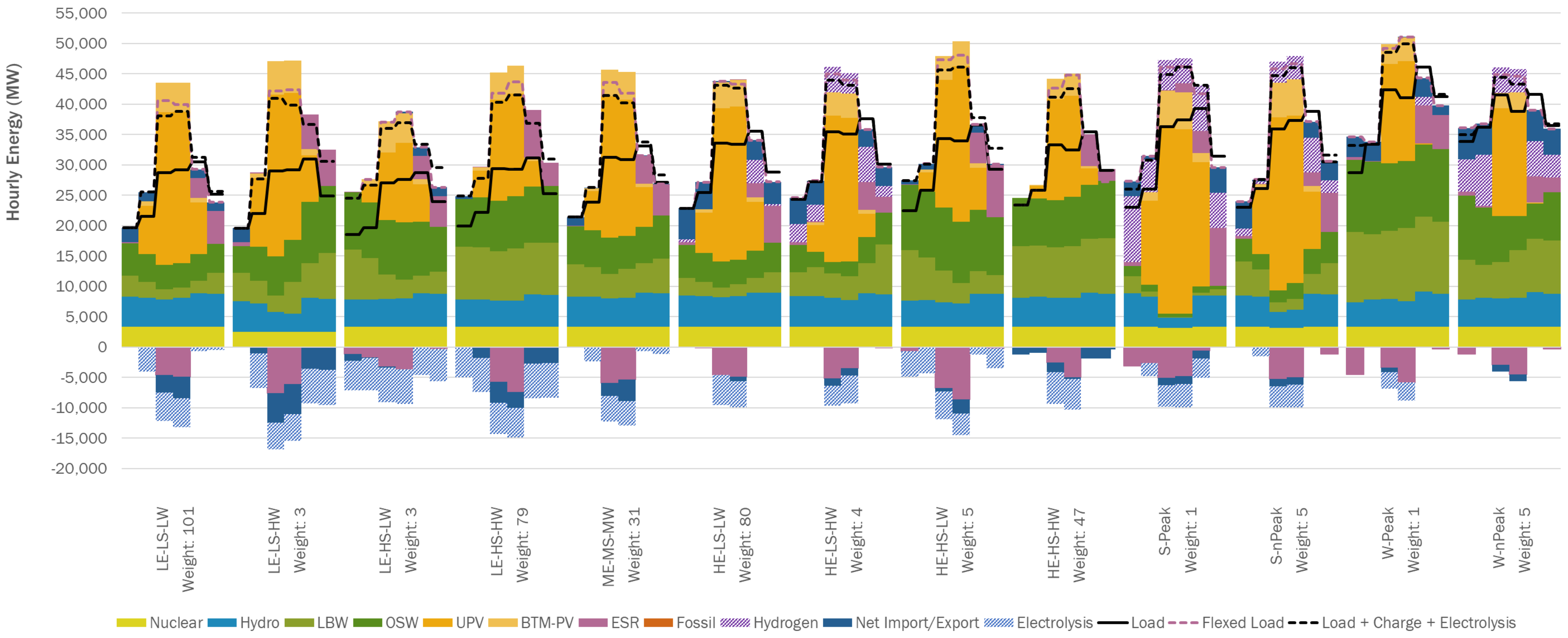
Model Generation on Representative Days in 2042



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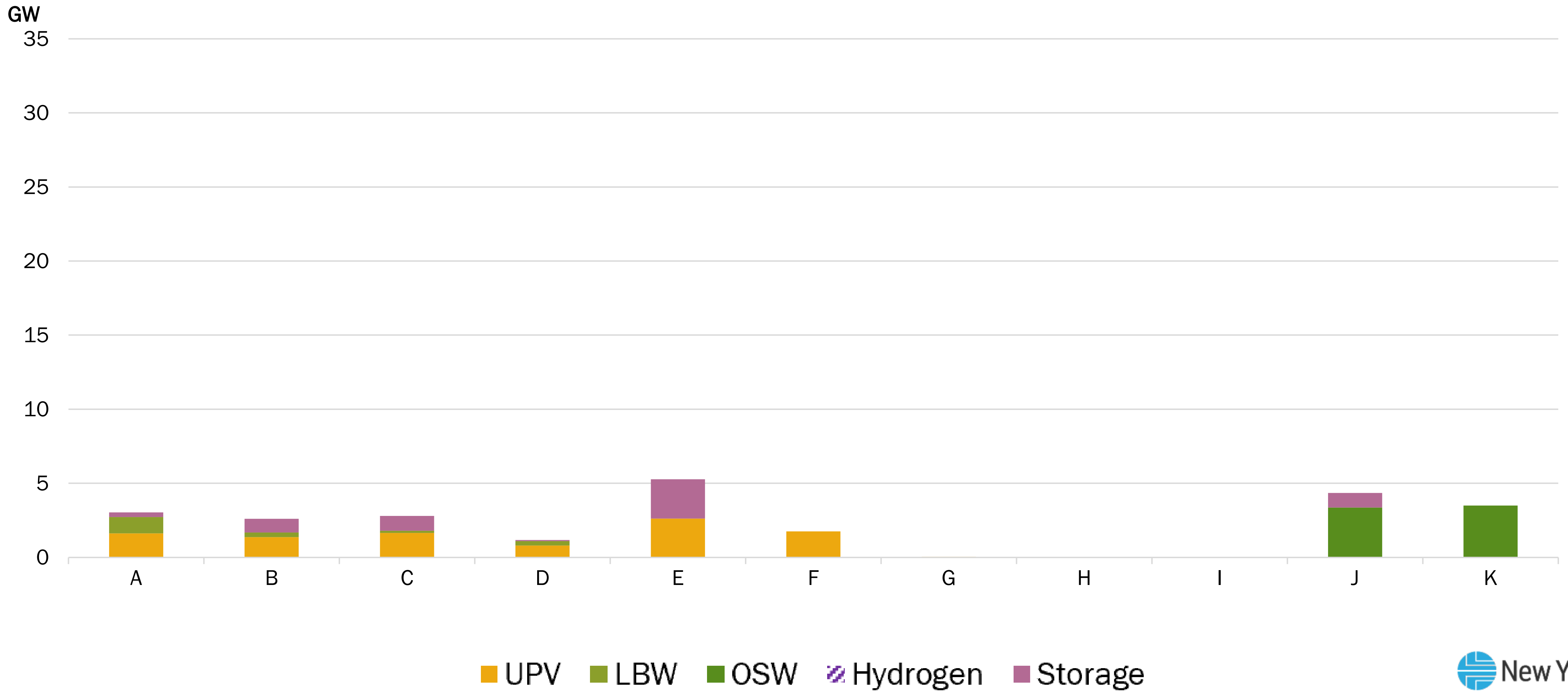
Cumulative Zonal Capacity Additions – 2030



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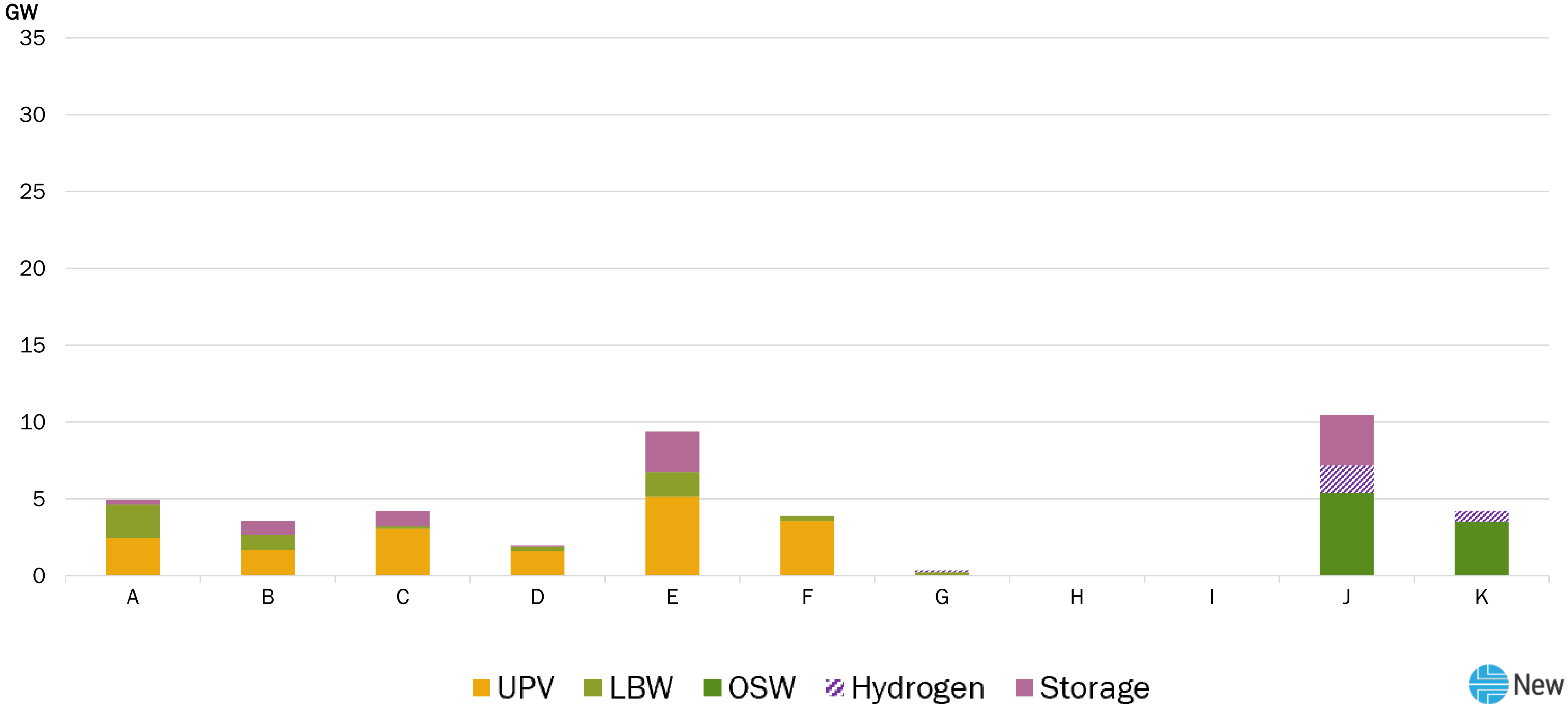
Cumulative Zonal Capacity Additions – 2035



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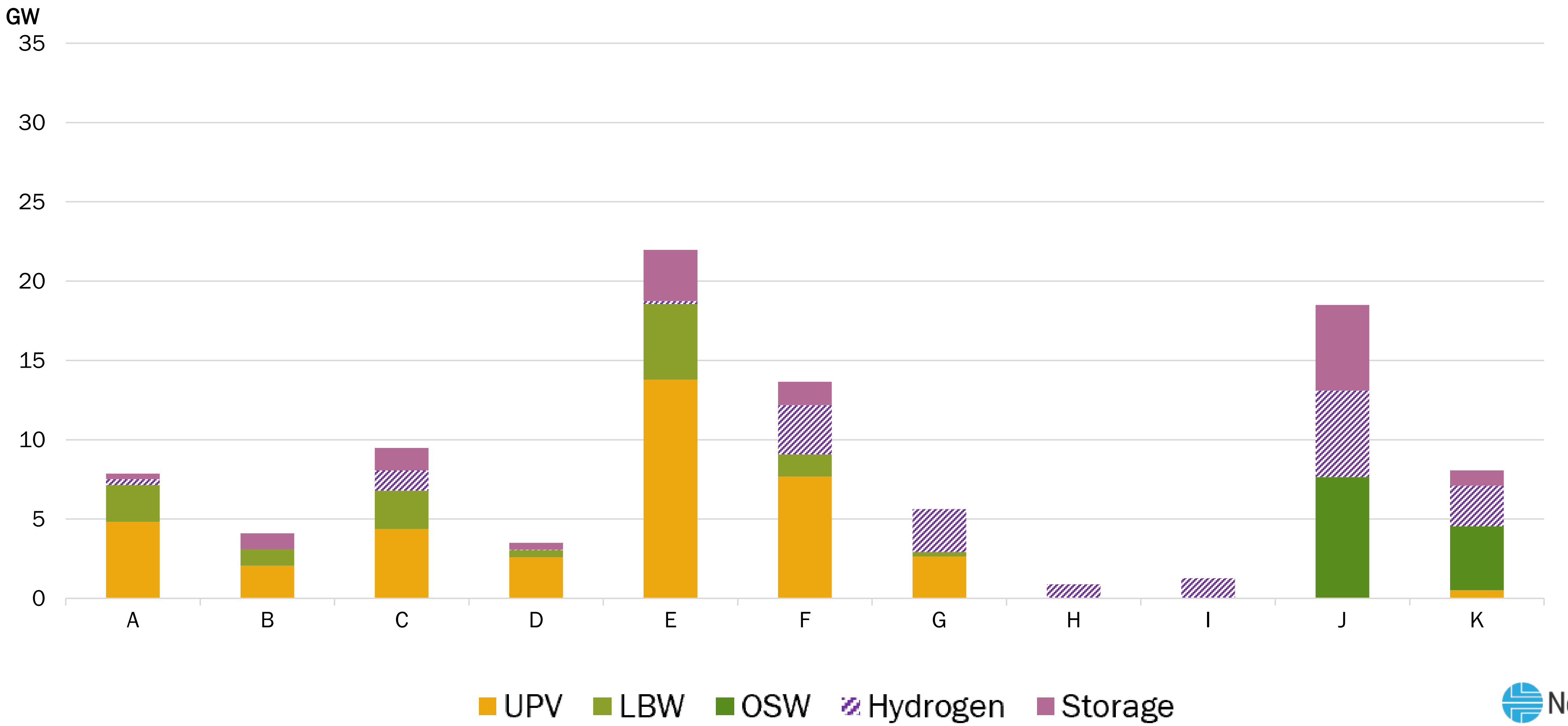
Cumulative Zonal Capacity Additions – 2040



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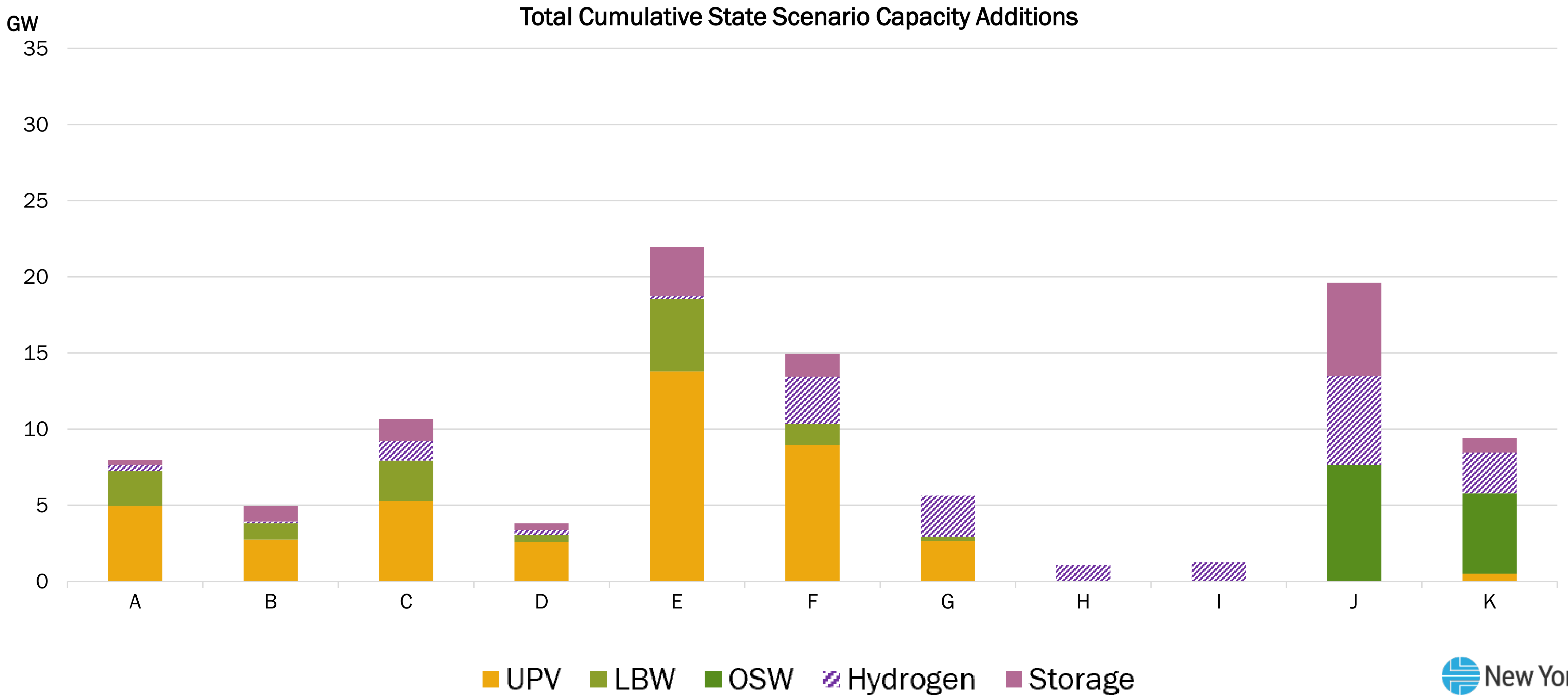
Cumulative Zonal Capacity Additions – 2042



Our Mission & Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

New York ISO

JOINT UTILITIES
OF NEW YORK

CGPP: Generation Siting Methodology

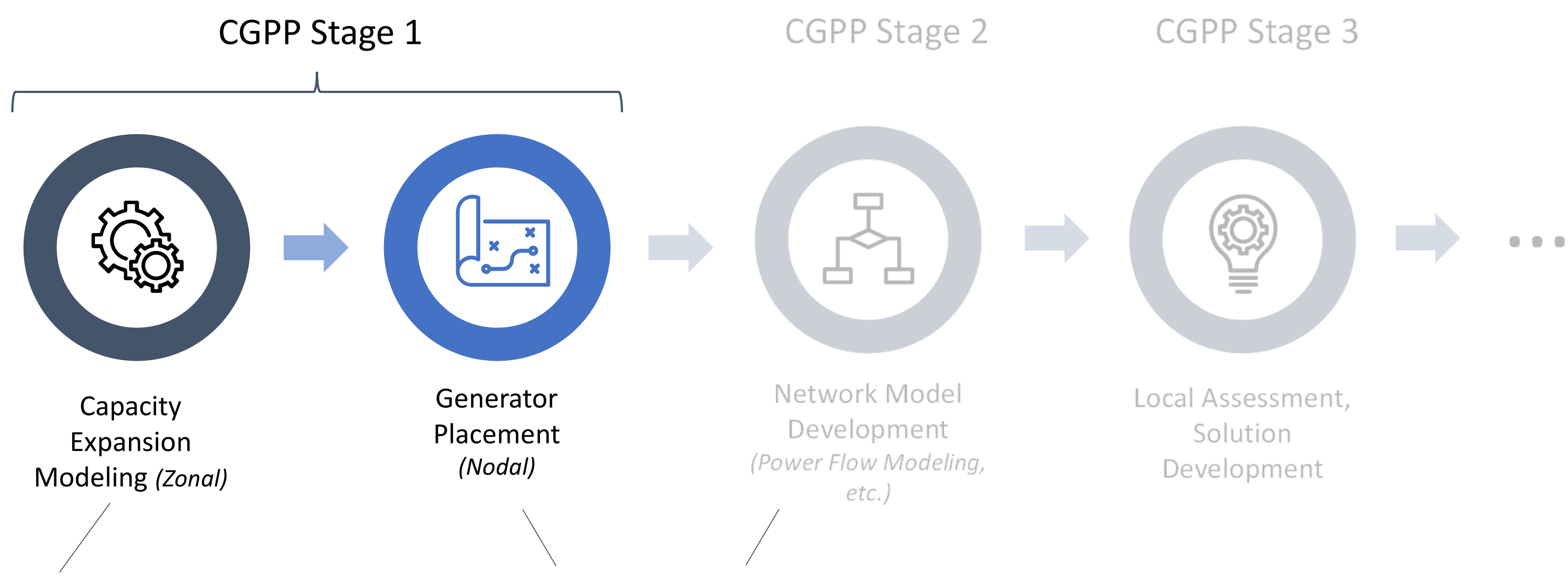
June 17, 2024 EPPAC Meeting

NYSEG nationalgrid Orange & Rockland Rockland Electric Company conEdison PSEG LONG ISLAND Central Hudson RG&E

Agenda

- High-level context: practicable siting methodology
- Zonal to nodal placement of generation specified in capacity expansion modeling
  - Sequence of considerations
  - Process
- Land use constraints, proximity to transmission
- Siting DER
- Q&A

Siting Methodology: Generator Placement



Planning methodology co-optimizing generation capital cost and production cost to determine a least cost future generation capacity buildout under various planning scenarios using detailed generation, transmission, load, and cost data, forecasts, and policies. *(NYISO)*

Nodal placement (*i.e.*, at the bus level, reflecting headroom, land use constraints, *etc.*) enables a power flow model to examine the grid to identify where transmission congestion is likely to occur.

Zonal to Nodal Placement: Sequence of Considerations

- CGPP objective: determine least-cost investment and dispatch solution
  - Placement within DACs to be monitored closely throughout the analysis
- Requirement: Placement of resources identified in the capacity expansion modeling work (NYISO)
  - *E.g.*, 1200 MW blocks, ~15 GW of solar PV in Zone E, *etc.*
  - Block sizes may be smaller on the lower voltage/115kV system
- Initial development: NYISO Interconnection Queue
  - But: what proportion of the queue is shed naturally as the economics become clear?
  - Model all interconnection queue projects at stage 6 or later.* Consider simplifying the models to aggregate generation to the POI instead of the full model build out with all the extra collector buses and discrete generators.

* *Known physical feasibility considerations will apply to queue projects at stage 6 or later.*
Queue reform may affect the way this methodology is applied. The JU plan to model sufficiently advanced interconnection queue projects: Stage 6 (Approved SRIS) or later in the preceding process; a passed infeasibility screening and cluster study in the new process. The JU will attempt to simplify models to aggregate generation to interconnection locations to avoid a full model build out with all the extra collector buses and discrete generators.*

Zonal to Nodal Placement: Sequence of Considerations (continued)

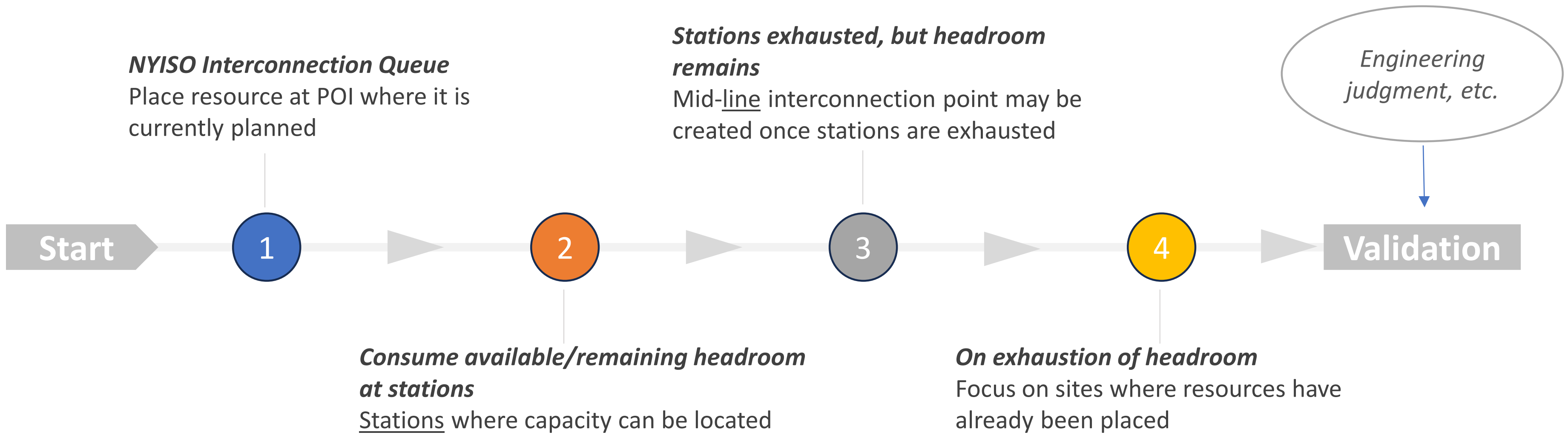
- NYISO Interconnection queue (continued)
  - Evaluate the split between projects in the queue (in each zone) by voltage level:
    - Apply this as an assumption for siting capacity from the buildout scenarios
    - *Example*: based on review of the NYISO queue, resources *beyond* the queue could be placed in Zone X: 40% at 345kV, 60% on lower-voltage system
- Renewables, DEFRs: should different approaches apply?
  - JU Methodology:
    - Same approach but for placement in DACs, *i.e.*:
      - Renewables and fuel cells may be placed in DACs
      - However, no *new* combustion units will be placed in DACs
    - Combustion DEFRs may be placed at existing fossil (combustion) facilities
      - Up to the existing nameplate capacity
      - Incremental capacity may *not* be sited in a DAC

Zonal to Nodal Placement: Sequence of Considerations (continued)

- Guardrails: size of individual projects at a single location
  - JU Methodology*:
    - ***Minimum resource type block size of 100 MW***
    - ***Maximum aggregate amount of generation at any location*** *(Note: storage would not offset these maximum capacity levels; these levels would cap the capacity of storage.)*
      - 600 MW at 115kV (3000A); 700 MW at 138kV (3000A); 1200 MW at 230kV (3000A); 2400 MW at 345kV (4000A)
- Coordination between the utility/utilities and developers
  - JU Methodology: Assume perfect coordination (i.e., developers build in the locations the JU identify in the study); solutions will unlock generation at specific locations, which will be made public in Stage 6, headroom updates, etc. subject to CEII limitations.

* *Subject to the profile of specific locations. Resource land-use considerations (e.g., for utility-scale PV) must be considered as well.*

Siting Methodology Illustrated



(Detail on each of these steps appears on the next slides.)

Zonal to Nodal Placement: Process

1. Start with NYISO interconnection queue
   - Place all resources at Stage 6 or later at the POI at which that project is currently planned
   - Supply curve data and county-level capacity expansion results to be considered
     - Example: skip a resource if it is located in an area that is already saturated to levels of Cap Ex models
2. Consume available/remaining headroom on transmission/local transmission buses*
   - Prioritized set of stations (county by county) where capacity can/should be located
   - Criteria for prioritization:
     - Existing/planned stations that are expandable
       - Existing generation resources retired/retiring
         - Note*: Re-powering is assumed within the State Scenario, specifically for hydrogen combustion*
       - Stations with space
     - Evaluate stations that may have headroom, but are not physically suitable for interconnecting resources
       - Interconnect to any lines that lead to that station and that have line-level headroom

** For this CGPP cycle, the Joint Utilities will use headroom calculations presented in the Feb 1, 2024 update filing.*

Zonal to Nodal Placement: Process (continued)

3. Once *stations* are exhausted, look at *line* locations
   - Is the system able to accommodate additional capacity?
   - Assumptions re: renewable capacity factor (simultaneous)
   - Identify locations where a mid-line interconnection point may be created
     - Interconnection points are assumed to be 3-breaker ring bus
     - Up to summer LTE rating of the existing line

4. On exhaustion of available headroom:
   - Place incremental resources at sites where resources have already been placed, but the interconnection threshold for a given location (*noted on slide 6*) has not yet been reached
   - Apply engineering judgement:
     - Consider: population density, flood zones, state parks/lands, etc. to select locations
     - Siemens strong bus analysis; screen out areas where interconnection is unlikely to be feasible

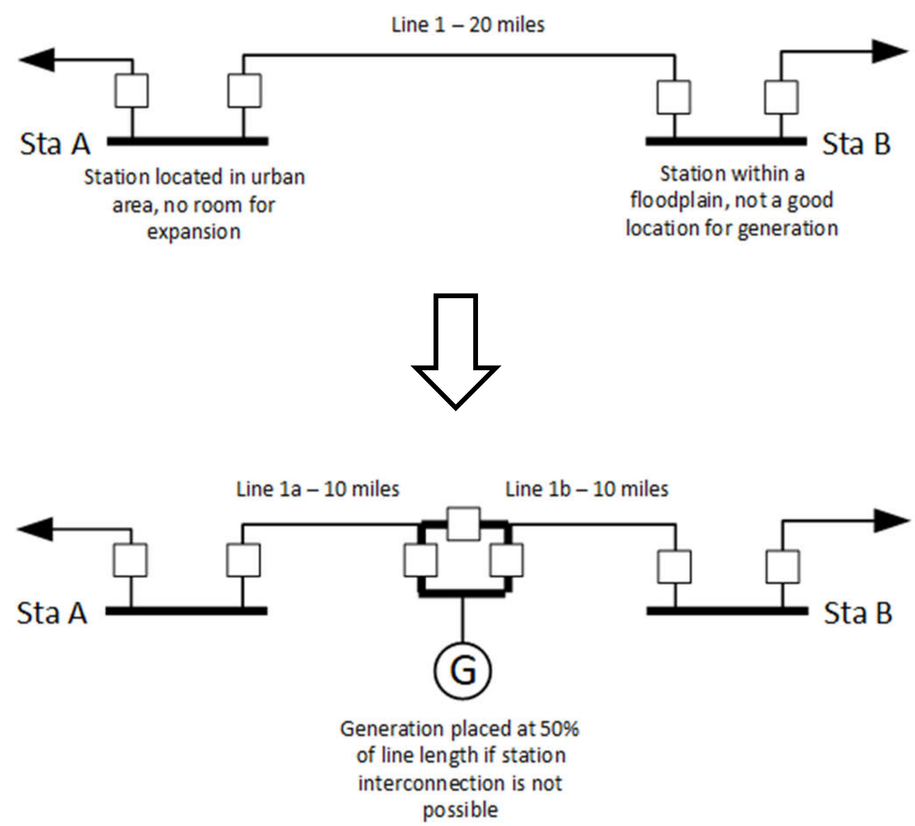
5. Post-placement check

Use available tools (e.g., supply curve, etc.) to validate placements

- Assumptions may need to change in the course of analysis of Step 3 (line location) decisions

Proximity to Transmission

- Challenge: Many stations are not expandable, but available land does exist
  - JU approach: Bisect lines, place generation on new lines so that it does not need to be placed at specific stations
- Evaluation of land-use constraints/restrictions
  - Based on NYSERDA Integration Analysis
- Upstate: Place large capacity bundles along existing lines, generally proximate to switching stations



Siting DER

- DER modeled separately as a reduction in load in power flow models
- DER siting assumptions will be informed by utilities' hosting capacity calculations and other tools

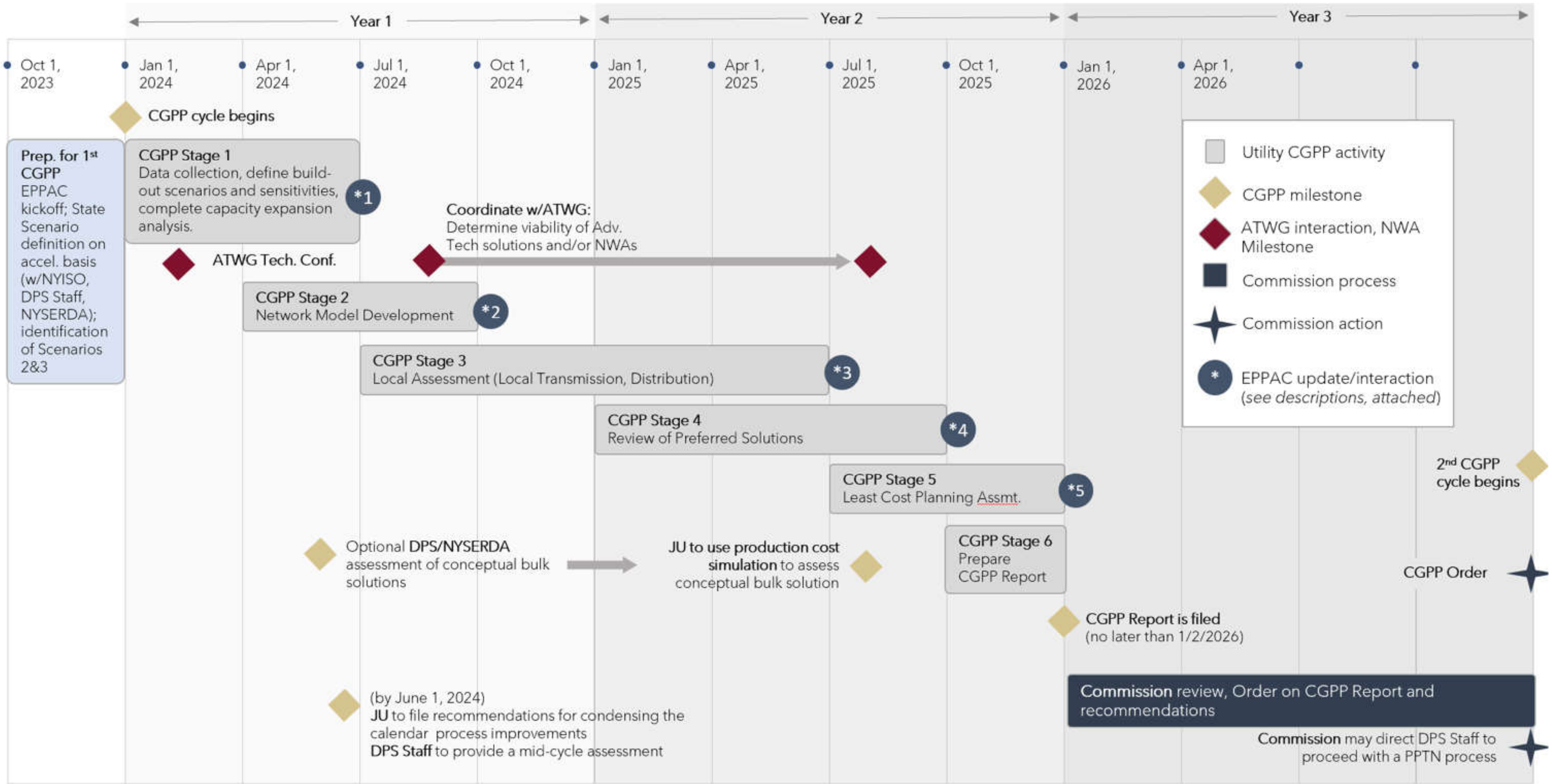
EXAMPLE:

- This forecast for solar resources is integrated into the load forecast for Scenario 2.
- It reflects a modification to the CaC 2022 Scenario 2: Strategic Use of Low-Carbon Fuels "High End Use Flexibility" load forecast.

Solar Roadmap Base	2030	2035	2040	2045	2050
A-F	7,196	9,773	12,608	16,001	20,038
GHI	1,118	1,208	1,307	1,426	1,567
J	754	1,009	1,290	1,625	2,025
K	1,231	1,511	1,819	2,188	2,626
Total	10,299	13,501	17,023	21,239	26,256

Q&A

CGPP Timeline (per Aug. 17, 2023 Order)[1]



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[1] This figure presents a potential pathway for future collaboration between the EPPAC and the Joint Utilities. However, dates and content may change due to the first-of-a-kind nature of this CGPP iteration.

CGPP Stage 1: Data Collection, Determination of Build-Out Scenarios, Capacity Expansion Modeling

Key Initiatives:

- EPPAC discussion and feedback on build-out scenarios the Joint Utilities propose
- Revisions to assumption sets as necessary, practicable
- NYISO to conduct capacity expansion modeling analysis of three build-out scenarios
- Prioritization of analyses and sensitivities that must be explored, likely future conditions that can be represented through modeling system constraints

Data, Models, Analyses

- Demand projections, assumption sets (documented, shared with EPPAC) for CGPP Scenarios
  - Aligned with CLCPA objectives for clean energy, battery storage resources, etc.
  - Other policy mandates
  - Technology limitations (availability, max build pace, etc.)
- NYISO capacity expansion model (software: ________)
- Joint Utilities evaluation of draft results for quality assurance, etc.

Outputs:

- Generation build-out scenarios for the State Scenario, Low-Transmission Need Scenario (“Scenario 2”), High-Transmission Need Scenario (“Scenario 3”)
- Presentation materials describing the build-out results
- Discussion of key implications
- Presentation materials describing sensitivity analysis, including the identification of beneficial bulk transmission build out
- Summary of lessons learned from CGPP Stage 1

Interactions with EPPAC:

- Meeting series: scenario development, assumption sets
- Meeting to review generation build-out under the State Scenario (led by NYISO)
  - Approximately February 19, 2024
- *1 Meeting to review generation build-out for Scenarios 2 & 3 (Joint Utilities to present)
  - Approximately June 24, 2024
- Meeting to discuss EPPAC guidance on need to pursue bulk transmission sensitivities
  - Approximately July 1, 2024
- Meeting to discuss CGPP Stage 1 Lessons Learned, siting methodology to be applied in CGPP Stages 2-4
  - Approximately July 15, 2024

CGPP Stage 2: Network Model Development

Key Initiatives:

- Prepare 36 base cases for power flow modeling (to be used in later stages to identify thermal, voltage constraints, etc.)

- For each Scenario: for each of three years (2030, 2035, n+20):
  - Summer baseline coincident peak demand
  - Winter baseline coincident peak demand
  - Off-peak (shoulder) load
  - Light load

Data, Models, Analyses

- NYISO's FERC 715 submission (available on or around April 1 each year)
- Scenario load forecasts used in Stage 1
- Generation build-out scenarios for the State Scenario, Low-Transmission Need Scenario ("Scenario 2"), High-Transmission Need Scenario ("Scenario 3")
- NYISO load and capacity data (Gold Book)
- Power flow and short circuit model, created by selected a vendor

Outputs:

- Network models for each scenario developed by the EPPAC for analysis by the Joint Utilities

Interactions with EPPAC:

*2
- Meeting to discuss CGPP Stage 2 Lessons Learned
  - Approximately October 14, 2024

CGPP Stage 3: Local Assessment

Key Initiatives:

- Short circuit and power flow analyses to determine limitations to the local system's ability to accommodate projected generation build-out

Data, Models, Analyses

- Zonal generation build-out scenarios
- Power flow and short circuit outputs developed in CGPP Stage 2

Outputs:

- Portfolio of projects to resolve local constraints (for evaluation in CGPP Stages 4 & 5)

Interactions with EPPAC:

*3
- Presentation by each utility summarizing the technology and zonal location of potential projects, CGPP Stage 3 Lessons Learned
  - Approximately July-August 2025

CGPP Stage 4: Review of Preferred Solutions

Key Initiatives:

- Optimize across the portfolio of solutions; qualitative review of portfolio of solutions

- Assess/modify power flow and short circuit cases established in CGPP Stage 2 to include all local solutions

Data, Models, Analyses

- Synergy assessment: analysis of cost-effective scope combinations or reductions to any of the individual local solution components

Outputs:

- Power flow and short circuit case database update according to optimization and synergy assessments
- Report of findings from third party consultant

Interactions with EPPAC:

*4
- Status update to EPPAC, CGPP Stage 4 Lessons Learned
  - Approximately October 13, 2025

CGPP Stage 5: Least Cost Planning Assessment

Key Initiatives:

- Least cost planning
- Capacity expansion modeling

Data, Models, Analyses

- Headroom analysis, existing and incremental created by proposed projects
- LT&D project costs
- Bulk solution costs
- Capacity expansion analyses

Outputs:

- Least cost portfolio – portfolio of projects that will facilitate the integration of resources required to meet NY policy objectives

Interactions with EPPAC:

*5
- Meeting to review least cost portfolio and CGPP Stages 1-5 Lessons Learned
  - Approximately January 12, 2026