# State of Illinois
# Integrated Resource Plan (IRP) + Resource Adequacy Mitigation Plan

## Stakeholder Workshop: Resources

April 10, 2026

ILLINOIS POWER AGENCY

Energy+Environmental Economics

Viridis CONSULTING


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# Meeting Participation Guidelines

- Please introduce yourself in the chat and include your name and organization
- Actively participate
  - Time for questions has been set aside at the end of the presentation.  If you have a question or comment about a particular slide, please make note of that slide number in your question
  - Please use the Raise Hand feature to ask a question, provide feedback and comments – unmute when a moderator calls on you and please share your name and organization when you speak
  - You can also use the Chat feature which will be moderated
- Be respectful of other people’s perspectives
- Stay concise to allow time for everyone to participate
- Post-Meeting Feedback
  - Workshop Comment Form: link will be provided at the end
- This meeting is being recorded. Recording will be posted on the ICC Integrated Resource Plan Website

# Agenda

| Topic | Time |
|---|---|
| Characteristics of resources for capacity expansion modeling | 10 min |
| Supply Side Candidate Resources | 30 min |
| Demand Side Candidate Resources | 20 min |
| Q&A and Discussion | 60 min |

# 2026 Proposed Stakeholder Meetings for IRP and Mitigation Plan

| PROPOSED PUBLIC STAKEHOLDER WORKSHOPS | ICC PROCEEDING |
|---|---|

## April

**Stakeholder Workshop #1**

Scenario Design Workshop

**Stakeholder Workshop #2**

Candidate Resource Workshop

## May

**Stakeholder Workshop #3**

Customer Cost Impact Methodology Workshop

*Date: TBD*

## June

**Stakeholder Workshop #4**

ELCC Results Workshop

*Date: TBD*

## August / Sept

**Public Workshop #5**

Draft Capacity Expansion Results Workshop

*Date: TBD*

## November

**IRP Report will be released on November 15th**

**IRP and Mitigation Plan will be posted on IPA, ICC and IEPA websites (per statute)**

**IRP and Mitigation Plan submitted to ICC and proceedings initiated**

# Recap from Earlier This Week: Proposed Scenario Matrix

**Each scenario combines a load forecast, policy posture, and technology assumption.**

| | Core Policy Planning Futures | | | System Evolution Futures | | | Alternative Decarbonization Paths (CEJA Extension) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Scenario** | Base Case | Low Load | High Load | High Flexible Future | High Flexible, High Load Future | Advanced Technology Acceleration | CEJA Extension | Net Zero | Net Zero + High Load | Illinois Resource Prioritization |
| **Purpose** | Central Planning Case | Lower bound of system need | Upper Bound of system need | Impact of high load flexibility on base case | Impact of high load flexibility with high load growth | Test emerging technology potential with optimistic timing + costs | Evaluate cost and benefits of delayed shutdown | Evaluate a 'net zero' emissions goal for electricity | Evaluate 'net zero' goal with high load growth | Analyze prioritization of all Illinois resources |
| **Load Forecast** | Base Case | Low Case | High Case | Base Case | High Case | High Case | Base Case | Base Case | High Case | Base Case |
| **Key Change from Base Cases** | Base Case | Base Case | Base Case | Higher EE, DR, VPP potential | Higher EE, DR, VPP potential | Earlier and lower-cost advanced nuclear, and LDES | CEJA Extension | CEJA Extension; Net Zero (exports offset in-state and imported emissions) | CEJA Extension; Net Zero (exports offset in-state and imported emissions) | CEJA Extension; Net Zero (exports offset in-state and imported emissions); RPS Resource Flexibility |

# Today's Workshop

+ **Today's Workshop: Overview of Approach to Candidate Resources**
  - Goal: Conceptual alignment and discussion of what will be included

+ **After this Workshop: E3 will post draft resource candidate assumptions for stakeholder feedback and comment**
  - For mature technologies, assumptions are better developed
  - For emerging technologies, E3 is seeking stakeholder comments and input on assumptions
  - Request input on Demand Side Resources (DSR) framework and necessary inputs from stakeholders
  - Upon reviewing stakeholder feedback, E3 will later post updated candidate resource assumptions

# Characteristics of Resources for Capacity Expansion Modeling

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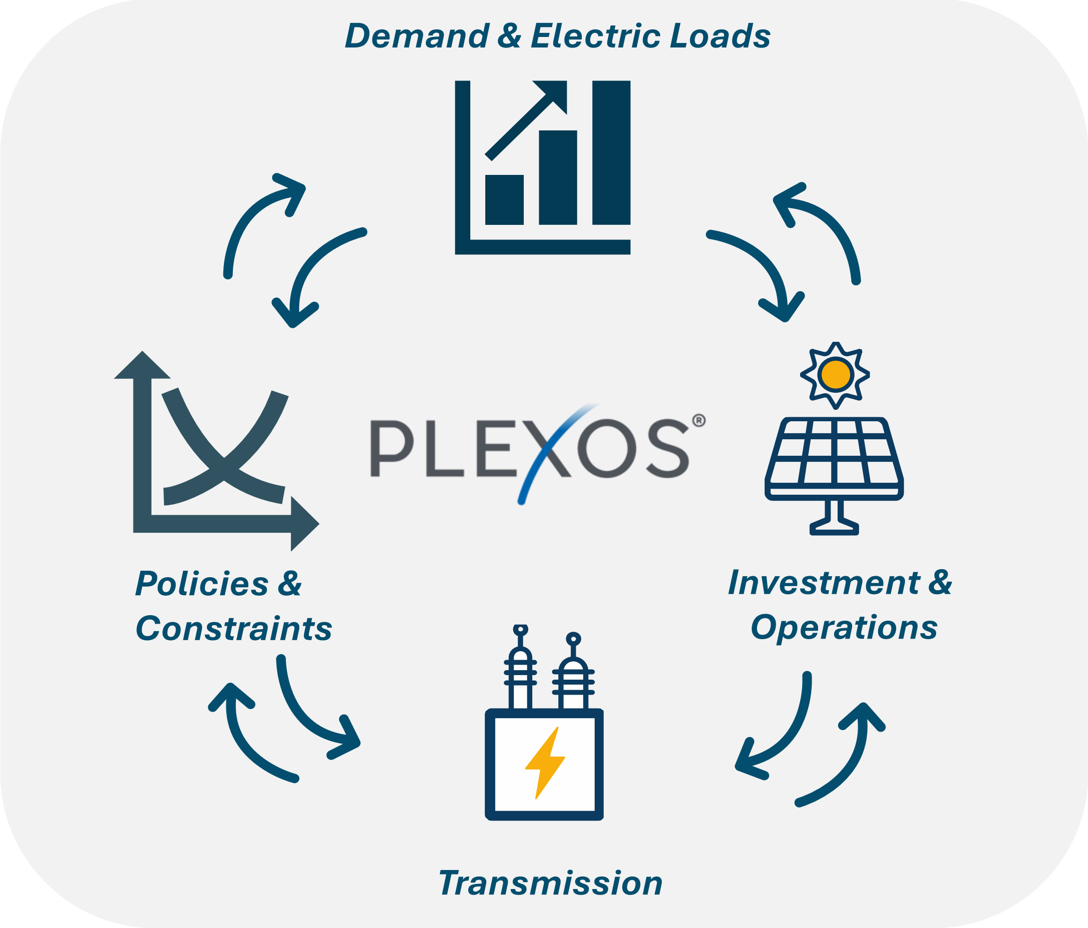
# Introduction of Capacity Expansion Models

**Key Question:** ***What investment decisions should be made to meet long-term system needs at the lowest cost?***




### *What does it do?*

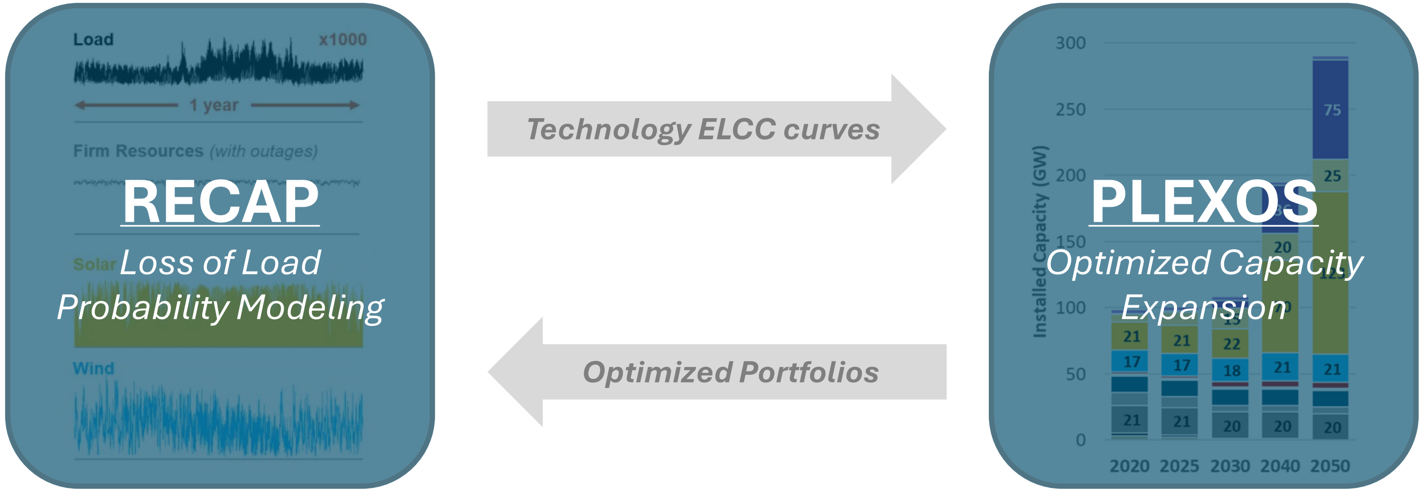
**PLEXOS LT** uses a linear optimization to identify a least-cost portfolio of new resources to meet reliability, energy, and decarbonization requirements specified in the model.

The model seeks to minimize the ***net present value of total system cost*** over the modeling horizon, including the capital investment and fixed operating costs of new resources, as well as the variable costs of system operations for both existing and new resources.

# Capacity Expansion Modeling Will Directly Incorporate Reliability Considerations

**We will leverage PLEXOS in tandem with a loss of load probability model, RECAP, to ensure the resulting portfolios are reliable over a broad range of weather conditions**

**1** Use LOLP model to quantify "effective load carrying capability," which measures contribution of each resource to reliability across 100s of simulations




**2** Use capacity expansion to optimize future portfolios to meet reliability and clean energy goals while minimizing cost

**3** Use LOLP model to simulate resulting portfolios across wide range of conditions, validating resource adequacy

# Typical Data Requirements in IRPs

**The IRP will draw on a wide variety of public data sources.**

| Category | Data Items | | Source |
|---|---|---|---|
| Load forecasts | • Annual and peak demand<br>• Large load growth | • Demand-side adoption<br>• Load electrification* | RTOs, utilities, IRP modeling |
| Existing Resources | • Operational parameters<br>• Costs (variable, fixed)<br>• Planned additions | •Retirement dates<br>*Note: CEJA-driven retirements will be considered in scenarios* | EIA, commercial data services (Hitachi, S&P, etc.) |
| **Candidate Resources** | • **Technology types**<br>• **Costs (capital, variable, fixed)** | • **Operational characteristics**<br>• **Available potential and timing** | **National labs, EIA, commercial data services** |
| Markets | • Market representation<br>• Zonal topology | • Energy price forecasts<br>• Capacity price forecasts | RTOs, forecast providers, IRP modeling |
| Fuels | • Fuel types & prices | | EIA, market data |
| Transmission | • Interconnection capacity | • Constraints* | RTOs, Utilities |
| Reliability | • PRM requirements | • Resource accreditation (ELCCs) | RTOs, IRP modeling |
| Policies | • Clean energy targets | • Federal policies | State policies |
| Financial Assumptions | • Discount rate<br>• Depreciation assumptions | • Inflation rate | National Labs, RTOs, market data, FERC |



*New or expanded data set

# How Candidate Resources are Represented in Capacity Expansion Modeling Objective Function and Constraints (High Level)

## Candidate Resource Inputs

For all candidate resources

- Cost
- Contribution to Reliability
- Contribution to RPS/CES
- Operational Characteristics

## PLEXOS LT Model

Simulate resource investments and operations that...

- Minimize Costs

subject to...

- Reliability Target
- RPS/CES Target
- Supply ≥ Demand
- Resource Build Limits
- System Operations

## Resource Selection

Selected capacity of ...

- Resource 1
- Resource 2
- Resource 3

# Resource Costs are Levelized for Capacity Expansion Modeling

**Levelized Fixed Costs allow resources to be compared on an "apples to apples" basis.**
**Variable costs (such as fuel) are considered in the model's dispatch simulations across the model horizon.**

- **Levelized Fixed Cost (LFC) ($/kW-yr):** the levelized revenue required in each year to cover all **fixed costs**. LFC is expressed in dollars ($) per kW of nameplate capacity per year of operating life.

$$\mathbf{LFC} = \frac{\text{NPV(Fixed Costs, \$)}}{\text{NPV(Nameplate Capacity, kW)}}$$

Fixed Costs =
- Capital expenditures and interconnection costs
- Investment tax credit (benefit → reduces cost)
- Fixed O&M
- Property taxes
- Warranty & augmentation

- **Levelized Cost of Electricity (LCOE) ($/MWh):** the levelized revenue required in each year per unit of energy produced (MWh) required for a resource to cover **all costs** (fixed and variable).
***LCOE is a useful reference but not a model input.***

*LCOE always includes assumptions about resource operations (because it includes variable costs and lifetime resource output). Capacity expansion models use LFC in tandem with the model's dispatch simulation, which accounts for variable costs in different resource portfolios.*

$$\mathbf{LCOE} = \frac{\text{NPV(Total Costs, \$)}}{\text{NPV(Energy, MWh)}}$$

Total Costs =
- Fixed costs
- Variable O&M
- Fuel
- Production tax credit

# Supply-Side Resources
# (Utility-Scale Generation and Storage)

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# Supply-Side Resources

**Supply-Side Resources represent utility-scale, front-of-meter candidate resources that the model can select through its cost optimization function.**

| Candidate Resources: Model can choose to build these resources | |
|---|---|
| **Mature Technologies** | **Emerging Technologies** |
| • Solar PV (utility-scale)<br>• Lithium-ion batteries (4- to 8-hr duration)<br>• Onshore wind<br>• Natural gas combustion (CCGT, CT)<br>• Nuclear (Gen III+ Pressurized Water Reactor) | • Advanced nuclear (Small Modular Reactors (SMRs) representing a range of emerging technologies)<br>• Long-duration storage (multi-day storage representing a range of emerging technologies) |

**Each resource has the following:**

- **Capital costs (upfront investment)**
- **Financing costs (debt and equity)**
- **Fixed and variable O&M**
- **Earliest commercial operations date (COD) the resource is available**
- **Maximum resource deployment potential (MW) by year and over the entire modeling horizon**
- **Fuel type and cost, heat rate, emissions intensity for thermal generators, output profile for renewable generators**
- **RPS/CES eligibility, if applicable**

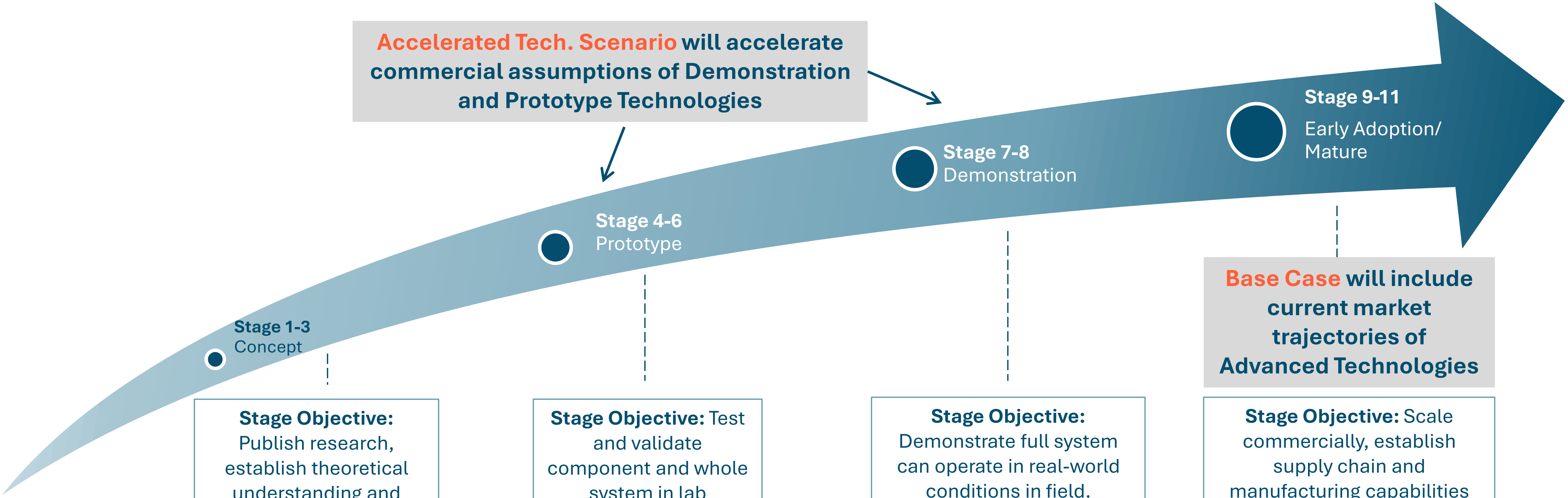
# Candidate Resources Become Selectable Over Time as Development and Technology Readiness Evolve

**Modeled availability of resources reflects real-world development timelines, interconnection processes and technology readiness.**

| Near Term: Now-2030 | Medium Term: 2031-2040 | Long-term: 2041-2047 |
|---|---|---|
| *Modeled from today's development pipeline in the queue and planned builds* | *Modeled from commercially mature candidate resources* | *Modeled from mature + commercially ready emerging resources* |
| • 2030 is the first year the model is allowed to select new resources; selection is limited to projects already in the queue and not yet contracted or in construction<br>• Resources added from 2026 to 2029 will be inputs (not model selections) based on projects in advanced development and existing state programs and procurements | • **Includes projects that could begin development** after the IRP is approved<br>• Key development milestones for new resources after 2030 include permitting, interconnection studies, and project financing, are expected to be achievable within this period | • 2047 is the last model year for this study<br>• Emerging technologies must be **commercially viable** within the study horizon<br>• In addition to key development milestones, emerging technologies may also require successful completion of demonstration projects, commercial scaling, and supply chain buildout |

# E3 leverages IEA's Technology Readiness Level Scale to assess Emerging Technology Commercialization

**Accelerated Tech. Scenario will accelerate commercial assumptions of Demonstration and Prototype Technologies**




**Base Case will include current market trajectories of Advanced Technologies**

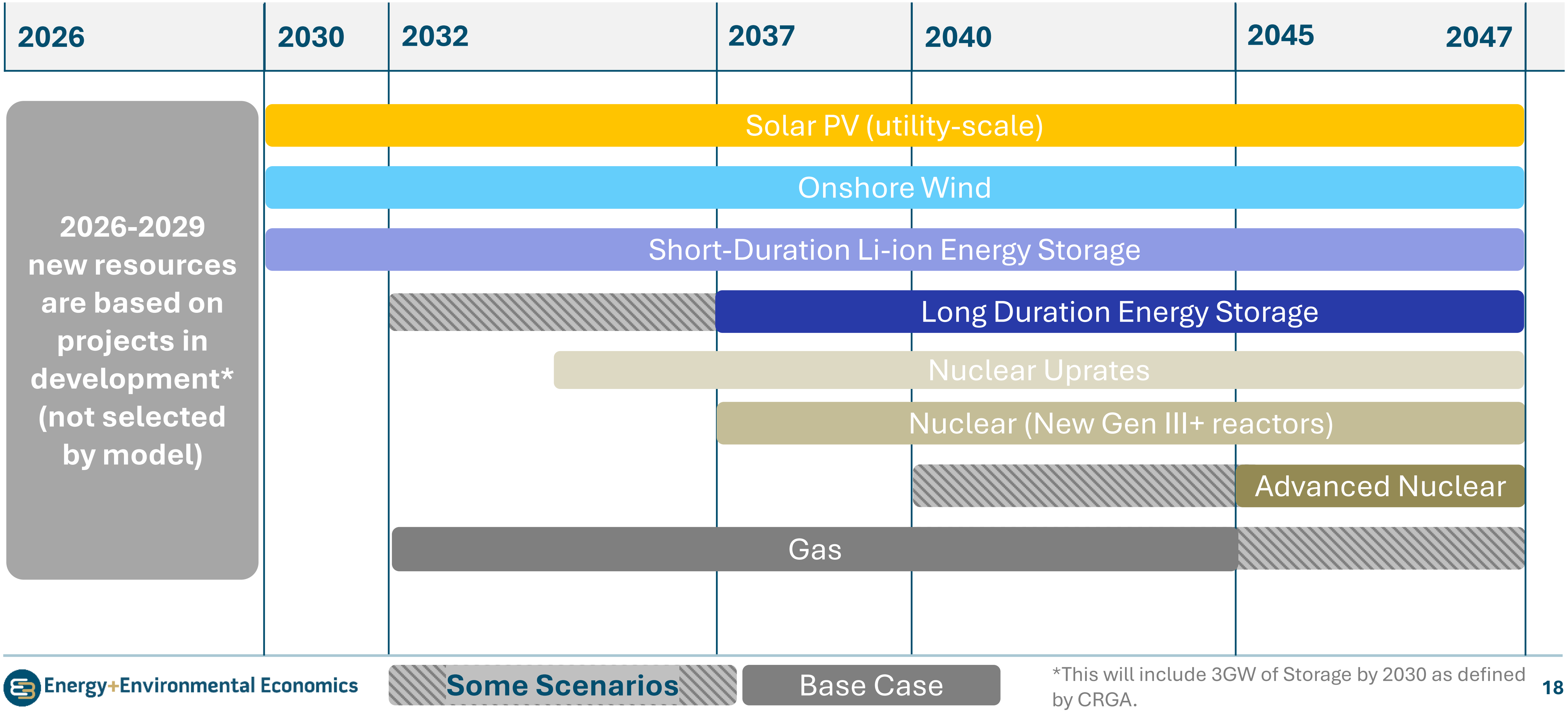
| Stage 1-3 | Stage 4-6 | Stage 7-8 | Stage 9-11 |
|---|---|---|---|
| **Stage Objective:** Publish research, establish theoretical understanding and proof-of-concept.<br>**Enablers:** Research funding, partnerships, early-stage grants | **Stage Objective:** Test and validate component and whole system in lab environment.<br>**Enablers:** Access to testing facilities, risk-tolerant investors. | **Stage Objective:** Demonstrate full system can operate in real-world conditions in field.<br>**Enablers:** Permitting/Regulatory support, public-private demo funding. | **Stage Objective:** Scale commercially, establish supply chain and manufacturing capabilities<br>**Enablers:** Market incentives (tax credits, procurement), financing mechanisms, supply chain support |
| | Nuclear Gen IV | Long-Duration Energy Storage | Nuclear Gen III+ |



See Appendix for further detail on IEA Stage Definitions and Categorization

# When New Supply-Side Resources Are Available in Illinois in the Model

**Timing reflects modeled in-service availability for each resource, with earlier availability and lower costs assumed for Emerging Technologies in the Accelerated Technology Scenario.**




*This will include 3GW of Storage by 2030 as defined by CRGA.

# Types of Nuclear To Be Potentially Modeled

**Commercial Readiness Decreases, Earliest Possible COD Increases from Left to Right**

| Uprates at Existing Facilities | New Large-Scale Nuclear | New Small Modular Reactors |
|---|---|---|
| Upgrades to existing nuclear power plants to increase their power output | New Gen III pressurized water reactor represented by the AP 1000, which has a unit size 1,100 MW | New Gen III+ SMRs; Multiple technologies exist, each with its own unit size, cost forecast, etc. One single representative SMR may be modeled |

# Representation of Combustion Resources

**The model evaluates the role of combustion resources across a range of policy-aligned scenarios, reflecting different assumptions on retirement timing, new build eligibility, and emissions constraints.**

<table>
<tr><th></th><th>Core Policy Planning Scenarios</th><th>Alternative Decarbonization Scenarios</th></tr>
<tr><td>Existing Combustion Generation</td><td>• Illinois fossil generators retire by the earlier of<br>i) CEJA emissions schedule or<br>ii) owner-announced retirement date</td><td>• Illinois fossil generators allowed to continue operations until end of useful life</td></tr>
<tr><td rowspan="2">New Combustion Generation</td><td colspan="2">• Illinois may build new gas generation out-of-state for reliability, but imports are capped at transmission limits[1]<br>• Out of state gas is allowed to run for its entire useful life (it does not need to shut down by 2045)</td></tr>
<tr><td>• New gas generators are allowed in Illinois, but:<br>  • New plants must retire by Jan. 1, 2045 per CEJA<br>  • New plants are modeled to fully recover investment costs by Jan. 1, 2045<br>  • Low carbon fuels are not modeled<br>  • Emissions from imported power are not limited</td><td>• New gas generators are allowed in Illinois<br>  • No limits placed on generation or operating life of individual units<br>  • Investment costs are recovered over entire operating life (i.e. 30 years)<br>  • Low carbon fuels are not modeled.<br>• To meet net zero goal, Illinois exports of GHG-free electricity must equal or exceed in-state and imported fossil-fuel generation<br>  • Zero-GHG Gen >= (In-State Sales + losses)</td></tr>
</table>

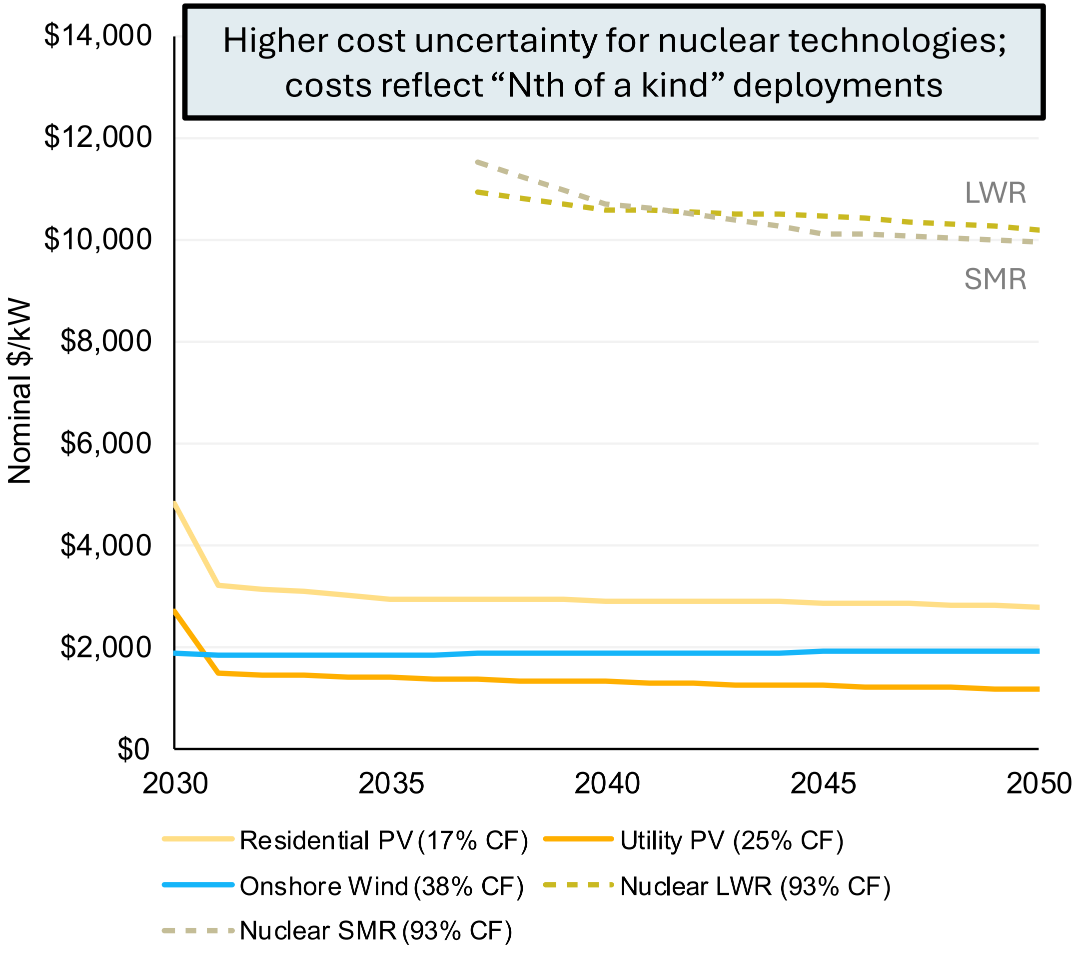
[1] Capacity Emergency Transfer Limit [CETL] for ComEd Zone and Zonal Import Ability (ZIA) for LRZ 4

# Upfront Capex and LCOE Forecasts for Clean Energy Resources

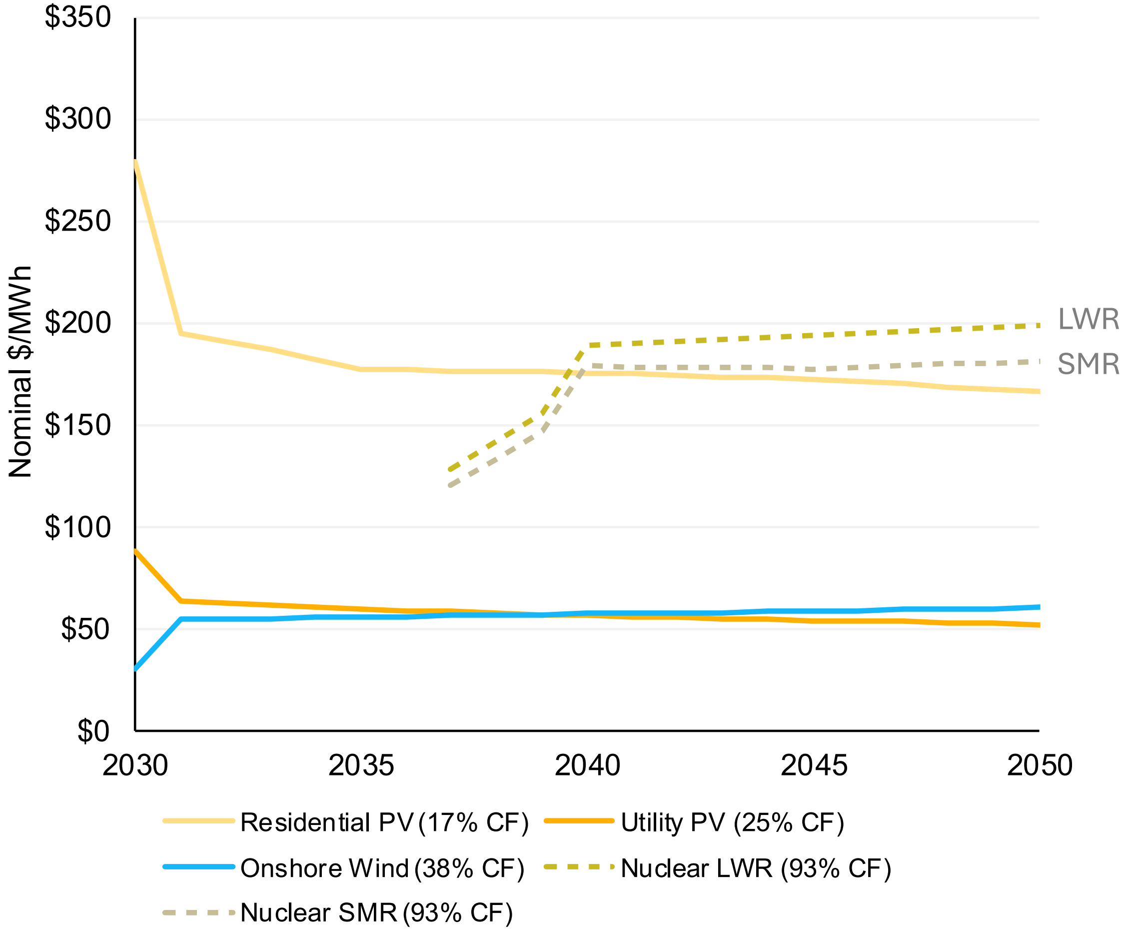
## Illinois-Specific, Nominal $, **Draft**

**Tariffs and tax credits are both assumed to expire by 2031**

### Capex Forecasts by Technology, Nominal $/kW-ac




### LCOE Forecasts by Technology, Nominal $/MWh





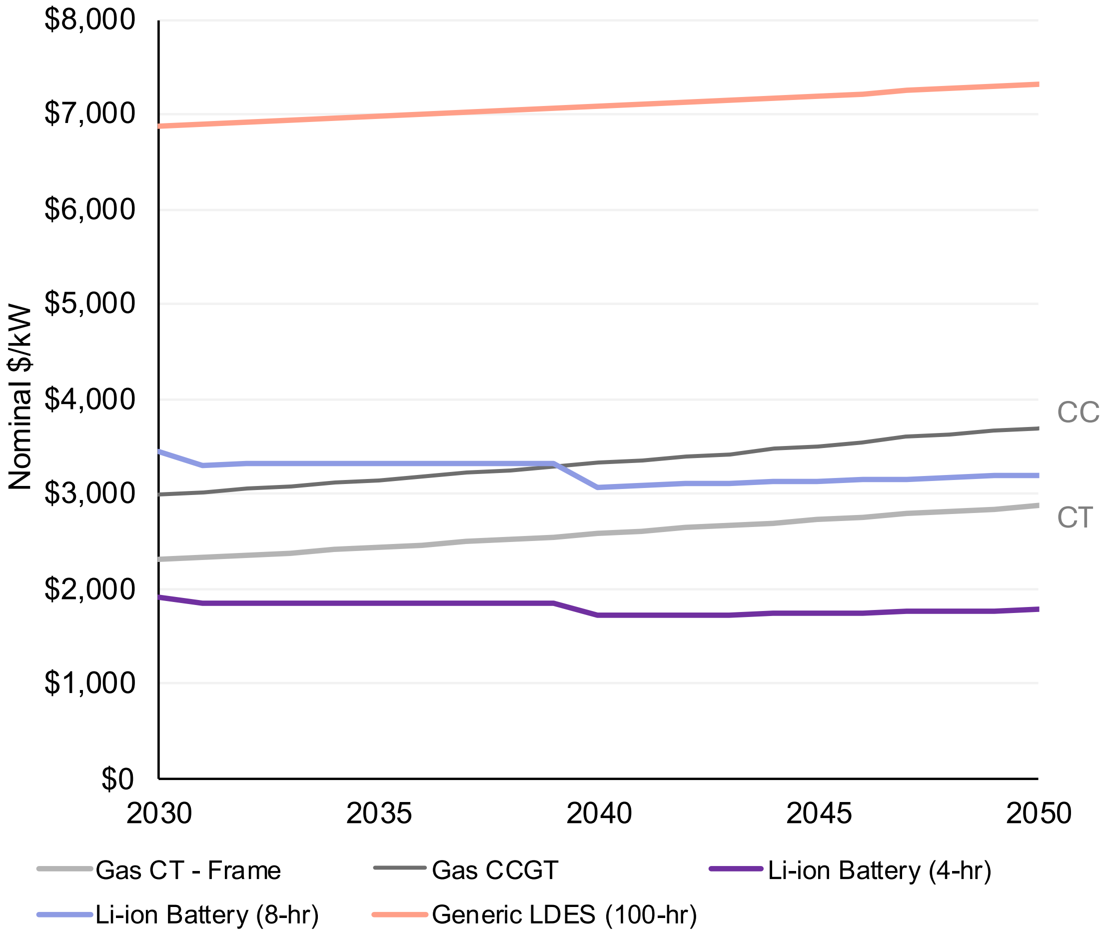

*Please refer to Appendix of this deck for additional information.*
*While residential PV is a demand-side resource, it is shown here for ease of comparison*

# Upfront Capex and LFC Forecasts for Energy Storage and Gas Resources

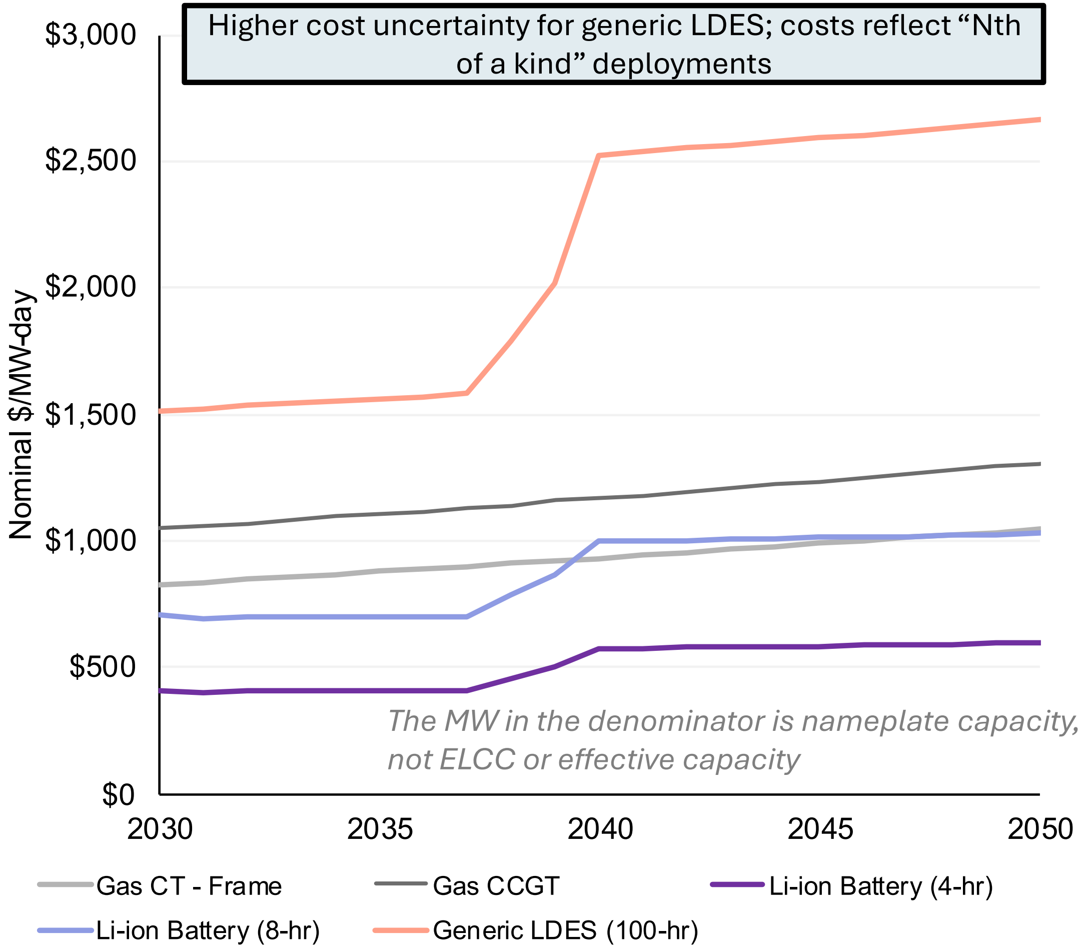
Illinois-Specific, Nominal $, **Draft**

**Tariffs assumed to expire by 2031; Storage tax credit by 2040**

## Capex Forecasts by Technology, Nominal $/kW-ac




## LFC Forecasts by Technology, Nominal $/MW-day



# Demand-Side Resources

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# Terminology for Demand-Side Resources

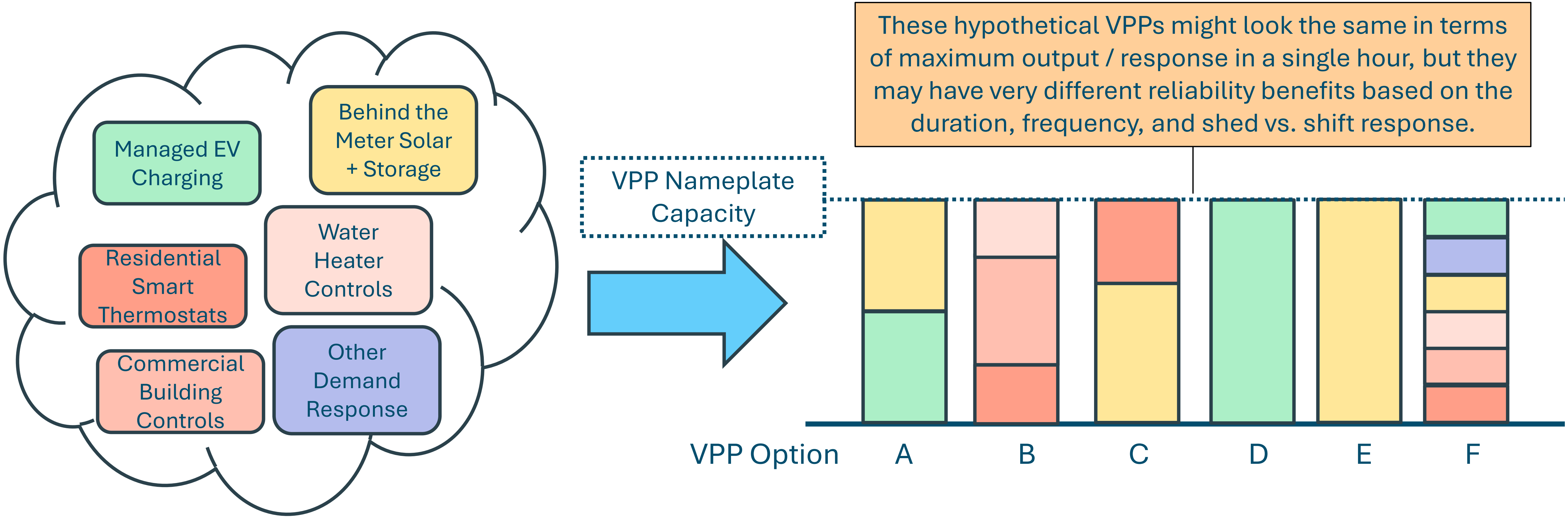
- **Energy Efficiency (EE): Reduction in demand enabled by better appliances/equipment that provide the same service with lower power needs**
- **Demand Response (DR): Reduction (“shed DR”) or shift (“shift DR”) in demand in response to price or a dispatch notification**
- **Distributed Energy Resource (DER): Broad term for customer-sited resources; may include solar, storage, DR, or backup generators**
- **Virtual Power Plants (VPPs): An aggregation of DERs that can “provide utility scale and utility-grade services like a traditional power plant”[1]**


*There is no single universally used definition for these terms; this is simply the IRP’s interpretation for alignment of understanding between the State agencies, consultants and stakeholders*

[1] https://www.energy.gov/edf/virtual-power-plants-projects

# Different Combinations of DERs Will Yield Different VPPs

- A VPP is an umbrella term for aggregated DERs
- The potential, cost, operational characteristics and value of a VPP is thus a function of the DERs it constitutes




***DER building blocks…***

***…can be packaged in different proportions to form a VPP***

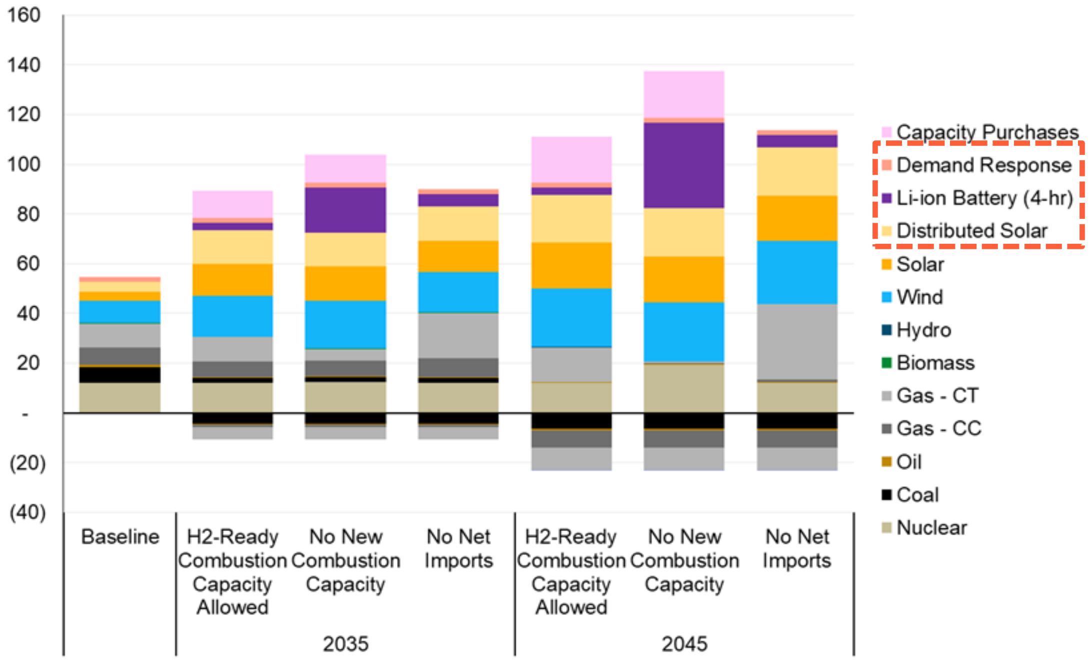
# Demand-Side Resources Were Modeled in the 2025 REAP and RA Study; the 2026 IRP and Mitigation Plan Will Build on This

*While the term "VPP" was not used in these studies, DR, battery storage and distributed solar were all modeled and optimally dispatched as part of the resource portfolio, in effect simulating a VPP*

- **Existing DR capacity was modeled**
- **Distributed solar resources were assumed to grow with support from state programs to meet existing targets under the IPA's Long-Term Plan**
- **Model identified a volume of total storage capacity that can contribute to system needs; in practice some of this capacity may be customer-sited**
- **In the 2026 IRP and Mitigation Plan, an additional VPP resource will be modeled, detailed in later slides**
- **However, care will be taken to avoid double counting; e.g., the same distributed solar capacity cannot be considered on its own *and* as part of a VPP**

**Statewide Nameplate Capacity by Scenario in Select Years, GW**

Source: 2025 Draft REAP*, Figure ES 3






* While this exact figure comes from the Draft REAP report, assumptions, models and thus results are consistent with the RA Study

# Baseline-Level Demand Side Resources Will be in Each Scenario; Two Scenarios Are Proposed With Higher Levels

| | Core Policy Planning Futures | | | System Evolution Futures | | | Alternative Decarbonization Paths (CEJA Extension) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Scenario** | Base Case | Low Load | High Load | High Flexible Future | High Flexible, High Load Future | Advanced Technology Acceleration | CEJA Extension | Net Zero | Net Zero + High Load | Illinois Resource Prioritization |
| **Baseline** | All scenarios will include:<br>1. Distributed solar growth consistent with the State's RPS targets and Long-term Renewable Resource Procurement Plan<br>2. Energy efficiency (EE) embedded in latest utility load forecasts<br>3. Existing demand response<br>4. New VPPs assumed following post-CRGA VPP tariffs | | | | | | | | | |
| **Additions from Baseline** | NA | | | These scenarios will include:<br>1. Higher EE trajectory<br>2. A representative flexible load resource to reflect the value of additional VPP resources | | NA | | | | |

# Clean and Reliable Grid Affordability Act Requirements Will Inform Baseline Assumptions For All Scenarios

- **CRGA requires Ameren and ComEd to file tariff proposals by June 1, 2026, to:**
  - Develop a VPP program that leverage customer-side DERs like batteries, smart thermostats, and EVs
  - Develop demand flexibility programs for batteries, EVs, and smart thermostats
- **Assumptions for participation in these tariffs and programs, and their system impacts, will need to be developed in coordination with the State agencies and informed by utilities for the 2026 IRP**
- **Their aggregate impact will then be reflected in the resource adequacy and capacity expansion models *in all scenarios***

# "High Flexible" Scenarios Will Estimate the Value of Incremental VPPs Through Comparison to a Counterfactual

**1 Collect Data**

**A Stakeholder Input**

*Stakeholders may provide cost and operational characteristics for VPP archetypes they would like the IRP to consider*

**2 Define Representative VPP**

*This IRP cycle will define a single representative VPP consisting of multiple DERs*

**3 Calculate VPP Reliability Value**

*The Effective Load Carrying Capability (ELCC) will be modeled for this VPP based on the operating characteristics of the underlying DERs*

**4 Estimate Avoided Supply-Side Capacity and Costs**

*Capacity expansion modeling will capture the value of this VPP by modeling scenarios with and without VPP adoption. The difference in supply side resources between cases represents costs saved (value) of the VPP.*

*Given data limitations and time constraints in this IRP cycle, the reliability value of one single representative VPP resource will be estimated. Stakeholder input will inform the definition of this VPP, and its capability will be directly reflected in the planning models to offset supply-side investments.*

# IRP is Collecting Stakeholder Input on Key VPP Parameters

*These assumptions inform how we model the VPP within the Long-Term Capacity Expansion Framework*

## 1. VPP Composition

**What does the VPP comprise of?**

- What kinds of resources can be expected over time under VPP programs?
- Important to distinguish between existing and new loads and resources

## 2. Available capacity

**What is the load reduction or net output to the grid?**

- Participation / enrollment assumptions, by year
- MW available by program and region, by year
- MW available by time of day / month / season

## 3. Duration and Frequency

**How long can it sustain that response? How frequently?**

- Hours per day/event
- Max events per month / year
- Minimum "rest time" between two events
- Notification time

## 4. Cost Information

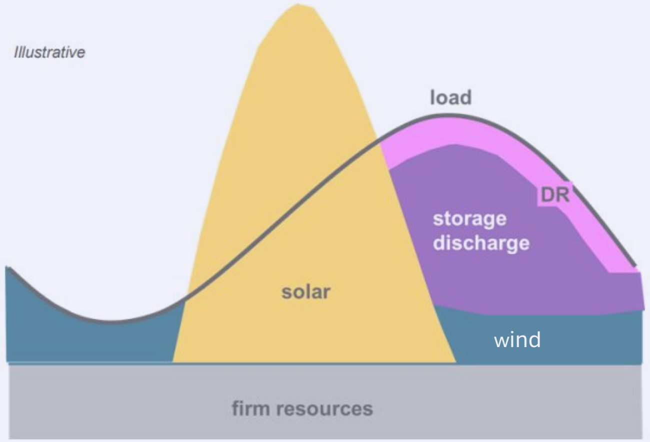
**What does it cost?**

- Administrative cost and participant incentive cost in $/MW-day / $/participant / $/event

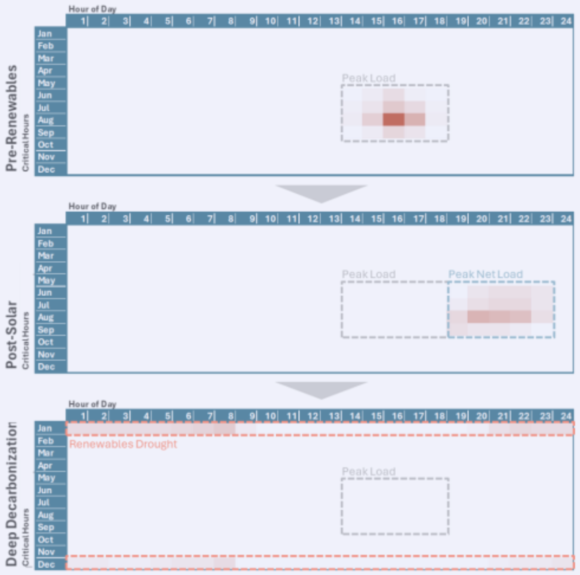
# The 2026 IRP Will Provide an Initial Benefit-Cost Assessment of VPPs and Can Inform Future Program Design

## Reliability Contributions of VPPs

*VPP ELCC will be calculated informed by its operational characteristics and limitations, accounting for interactive effects with loads and other resources*

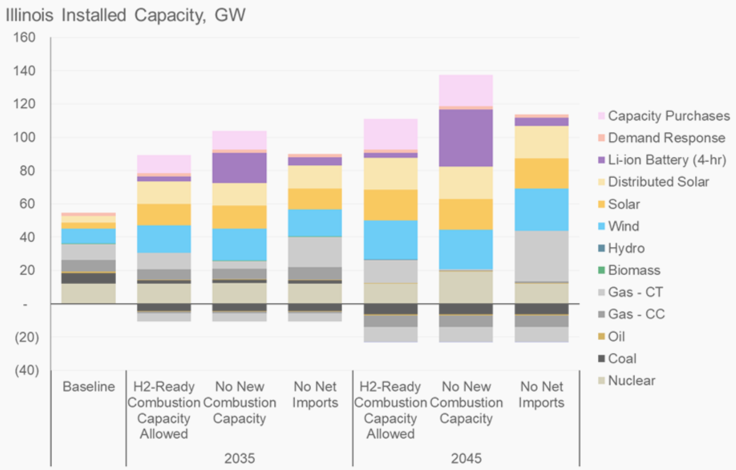



*The long-term planning framework will show how critical reliability periods may evolve over time, informing future program design*




## VPP Benefits Assessment

*The ELCC of VPPs will be an input into the capacity expansion model, which will estimate the potential benefits of VPPs through reductions in investment and operating costs*



# The 2026 IRP Advances Demand-Side Planning by Using a Representative VPP to Assess System Benefits

+ **The modeling framework and outputs from the 2026 IRP and Mitigation Plan will -**
  - Enable formal avoided cost studies grounded in IRP modeling outputs
  - Provide a structure to evolve from a single representative VPP to multiple archetypes
  - Build toward tighter coupling between program design and system planning (e.g., critical hours and ELCC-informed VPP program design)
+ **In addition to the modeling, stakeholder input on VPP cost and parameter specifics remains key to further refinement of the approach in future IRPs**

# Stakeholder Feedback and Q&A

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# How Can Stakeholders Submit Comments?

## + Submit comments in response to this workshop

- Comments should be submitted within **14 days – April 24th, 2026**
- Stakeholder Meeting #2 Comment Form
  - IRP Stakeholder Workshop #2: Candidate Resources – Fill out form
- Additional IRP-Related Questions for the ICC can be submitted via e-mail:
  - Joy Nicdao-Cuyugan: joy.nicdao-cuyugan2@illinois.gov
  - Subject Line – IRP Stakeholder Comments – Workshop #2

IRP Stakeholder Workshop #2:
Candidate Resources

# Q&A

- If you have a question or comment about a particular slide, please make note of that slide number in your question
- Please use the Raise Hand feature to ask a question, provide feedback and comments – unmute when a moderator calls on you and please share your name and organization when you speak
- You can also use the Chat feature which will be moderated

# Appendix

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# E3 leverages IEA's Technology Readiness Level Scale to assess Emerging Technology Commercialization

| | | | |
| --- | --- | --- | --- |
| CONCEPT | 1 | Initial idea | Basic principles have been defined |
| | 2 | Application formulated | Concept and application of solution have been formulated |
| | 3 | Concept needs validation | Solution needs to be prototyped and applied |
| SMALL PROTOTYPE | 4 | Early prototype | Prototype proven in test conditions |
| LARGE PROTOTYPE | 5 | Large prototype | Components proven in conditions to be deployed |
| | 6 | Full prototype at scale | Prototype proven at scale in conditions to be deployed |
| DEMONSTRATION | 7 | Pre-commercial demonstration | Solution working in expected conditions |
| | 8 | First of a kind commercial | Commercial demonstration, full scale deployment in final form |
| EARLY ADOPTION | 9 | Commercial operation in relevant environment | Solution is commercially available, needs evolutionary improvement to stay competitive |
| | 10 | Integration needed at scale | Solution is commercial and competitive but needs further integration efforts |
| MATURE | 11 | Proof of stability reached | Predictable growth |

- **The IEA Technology Readiness Level Scale is a framework to ground technology maturity assessments**
- **It supports consistent classification of emerging technologies across resource types**
- **Shows how technologies progress from early concept to market adoption**
- **Informs when emerging technologies may be appropriate for long-term model inclusion**

Source: https://www.iea.org/reports/clean-energy-innovation/innovation-needs-in-the-sustainable-development-scenario

# What is E3 RECOST?

## Overview of Model and Uses

- **RECOST** is E3's in-house discounted cash flow model used to calculate levelized fixed costs and levelized cost of electricity for mature and emerging technology resources, inclusive of financing costs
- **RECOST** evaluates the fundamental economic costs of building new resources to inform energy system modeling, validate investment theses, and shape resource strategy for public and private sector stakeholders

***RECOST is built to inform the ongoing debate around how to finance and build the resources necessary for the energy transition by leveraging E3's expertise on this topic in a transparent and rigorous model***

### E3 RECOST

**Technology Inputs (Sources)**

**Operating Assumptions**
*Public Estimates, Market Data, E3 Analysis*

**Cost Assumptions**
*Public Estimates, Market Data, E3 Analysis, Halcyon*

**Financing Assumptions**
*Public Estimates, Market Data, E3 Analysis, Halcyon*

**Outputs (Metrics)**

**Levelized Costs**
*Levelized Fixed Costs (LFC), Levelized Cost of Energy (LCOE)*

**Results Validation**

**Discounted Cash Flows**
*Net Present Value (NPV), Internal Rate of Return (IRR)*

**Uses**

**Utilities and Resource Planning Entities**
*Transparent, Defensible, and Public-Facing Analysis for Integrated Resource Planning (IRP) and Analogous Processes*

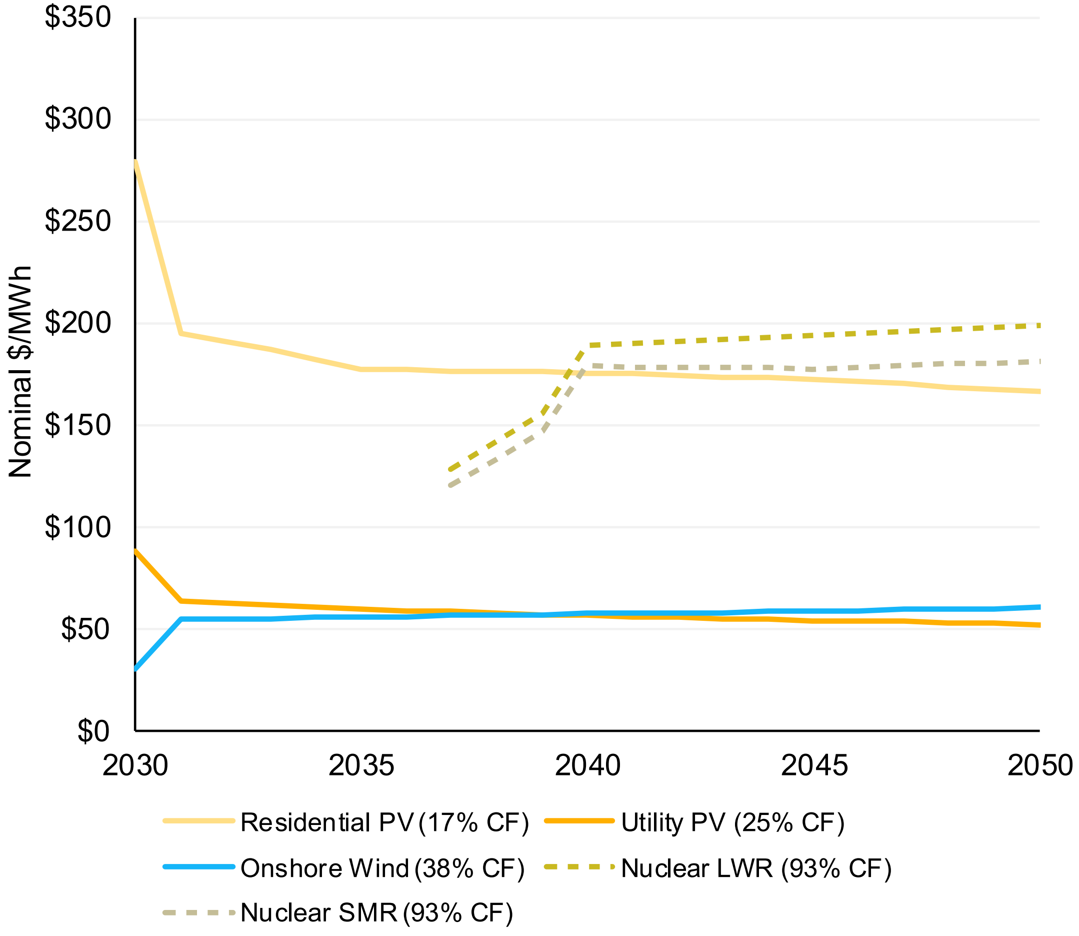
**Investors, Asset Owners, and Developers**
- *Capital Expenditure, Operating Expense, and Financing Scenario Forecasts to Support Investment Thesis or Strategy Formation*
- *Competitive Pricing and PPA Analysis to Support Request For Proposal (RFP) and Analogous Processes*

# Cost Forecasts for Clean Energy Resources

Illinois-Specific, Nominal $, **Draft**

+ **Federal investment and production tax credits for solar and wind resources are scheduled to expire on July 4, 2026, with a safe harbor window extending through 2030**
  - Solar and wind resources are assumed to qualify for the 10% domestic content adder to comply with other federal trade policies (see below)
+ **Federal trade policies, including tariffs, Anti-Dumping and Countervailing Duties (AD/CVD), and Foreign Entities of Concern (FEOC) regulations, are assumed affect resource costs through 2030**
  - To be eligible for federal tax credits through 2030, all resources are assumed to meet domestic content requirements to avoid FEOC penalties (with cost premiums)
  - Weighted-average (effective net) tariff rates on remaining imports are assumed to be 42% for solar PV and 12% for wind resources in 2030
+ **Federal trade policies are assumed to return to the pre-2025 schema after 2030**

## LCOE Forecasts by Technology, Nominal $/MWh





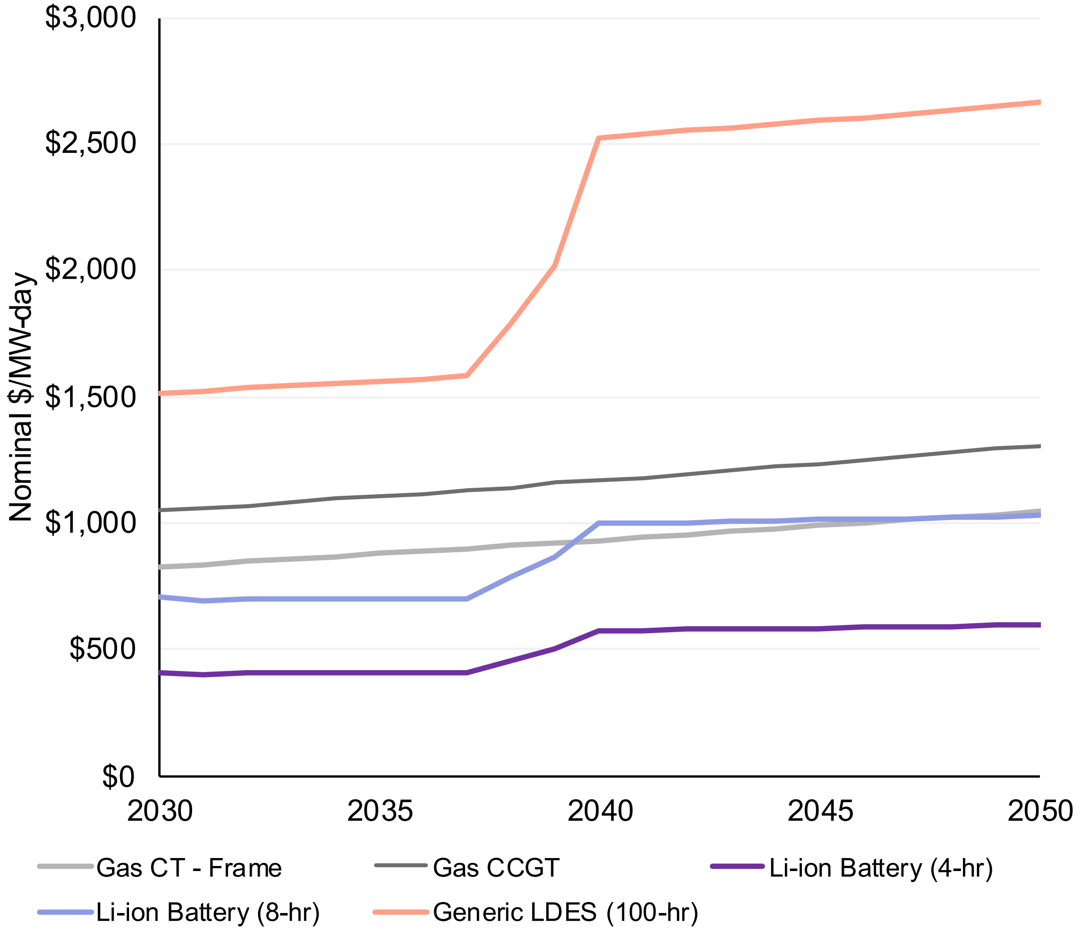

Note: Capacity factors reported above are illustrative state-wide estimates. Robust simulation of hourly renewable profiles across multiple locations within IL has taken place. As a result, LCOE will vary based on location within the state in energy planning models.

# Cost Forecasts for Energy Storage and Gas Resources

Illinois-Specific, Nominal $, **Draft**

- **Federal investment tax credits for energy storage resources are scheduled to expire after 2032, with a three-year phase out**
  - An additional four-year safe harbor window is assumed, which extends tax credit eligibility through 2039
  - Battery resources are assumed to qualify for the 10% domestic content adder to comply with other federal trade policies (see below)
- **Federal trade policies, including tariffs, AD/CVD, and FEOC regulations, are assumed affect resource costs through 2030**
  - To be eligible for federal tax credits through 2030, all resources are assumed to meet domestic content requirements to avoid FEOC penalties (with cost premiums)
  - Weighted-average (effective net) tariff rates on remaining imports are assumed to be 23% for Li-ion batteries in 2030
- **Federal trade policies are assumed to return to the pre-2025 schema after 2030**

## LFC Forecasts by Technology, Nominal $/MW-day



# Additional Cost Assumptions by Technology

Illinois-Specific, 2030 COD

| Technology | Useful Life (yr) | WACC* (%) | FO&M ($/kW-yr) | VO&M ($/MWh) |
|---|---|---|---|---|
| Residential PV | 30 | 8.7% | $34 | -- |
| Utility PV | 30 | 7.4% | $24 | -- |
| Onshore Wind | 30 | 7.6% | $37 | -- |
| Nuclear LWR | 50 | 10.5% | $220 | $3.08 |
| Nuclear SMR | 50 | 10.5% | $171 | $2.86 |
| Gas CT – Frame | 30 | 7.3% | $32 | $7.64 |
| Gas CCGT | 30 | 7.3% | $38 | $2.25 |
| Li-ion Battery (4-hr) | 20 | 7.4% | $37 | -- |
| Li-ion Battery (8-hr) | 20 | 7.4% | $65 | -- |
| LDES (100-hr) | 20 | 10.5% | $35 | -- |

*WACC has been estimated based on a combination of cost of equity, cost of debt and leverage informed by market benchmarks