IRP Stakeholder Meeting

December 16th, 2020

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Agenda

- Update on IRP Development Progress
- Inputs & Assumptions Update
- Alternative Resource Plans Modeled To-Date
- Uncertain Factors & Scenarios Update
- Preliminary Revenue Requirement Results
- Preferred Plan Selection Methodology
- Next Steps

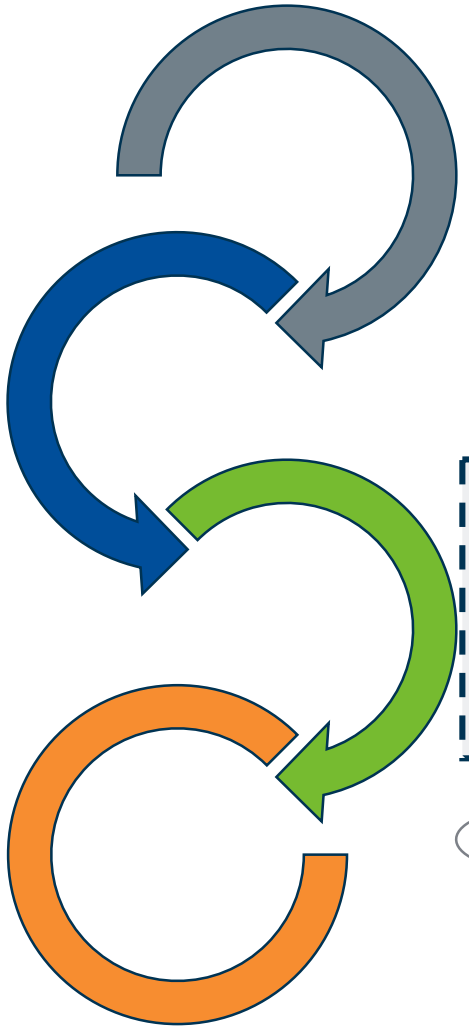
Triennial IRP Development Timeline

Gathering Input

July: Stakeholder meeting to discuss modeling assumptions / inputs

Reviewing Results

Q1 2021: Review updated results including detailed review of inputs outlined in IRP rules



Refining Assumptions and Inputs

Early April: 2020 Annual Update Stakeholder Meeting to introduce process

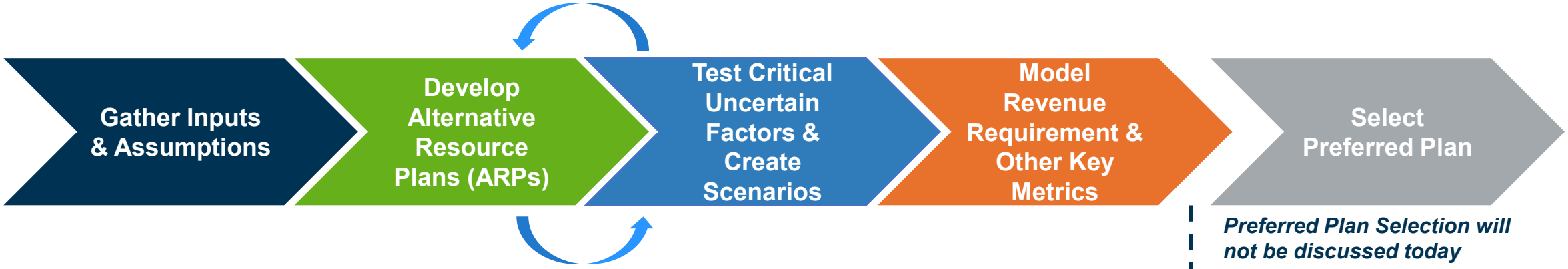
Conducting Analysis

Late Q3 – Early Q1: Stakeholder meeting(s) to discuss preliminary results

During and following October Stakeholder Meeting, received feedback which was considered in the process of creating today's new materials

- ***October 19th:*** *Initial review of preliminary results*
- **Early-December:** Additional stakeholder meeting to review next round of results
- **January**: Demand-Side (Electrification, DSM, Behind-the-Meter solar & storage) Focused Discussion
- ***As Needed:*** Topical meetings with specific stakeholders on comments received

Overall Analytical Process



Preferred Plan Selection will not be discussed today

Load Forecasts
Low, Mid, High, Electrification

Fuel Forecasts
Nat Gas, Coal, Fuel Oil

DSM Forecasts
Maximum and Realistic Potential

New Generation
Capital, O&M, Operational info

Existing Generation
Capital, O&M, Operational info

ARPs include combinations of unit retirements, unit additions, DSM levels

Evergy Combined
21 ARPs

Evergy Metro
9 ARPs

Evergy MO West
5 ARPs

Combinations of Critical Uncertain Factors analyzed – currently 27 total combinations:

Load
Low, Mid, High

Nat Gas
Low, Mid, High

CO_2
Low, Mid, High

20-Year Net Present Revenue Requirement (NPVRR) calculation of ARPs for each of the 27 scenarios

ARP providing lowest NPVRR across scenarios is generally selected as the Preferred Plan.

Higher NPVRR ARP can be selected but decision must be supported

Gather Inputs & Assumptions

Laura Becker
Al Bass
Tim Nelson

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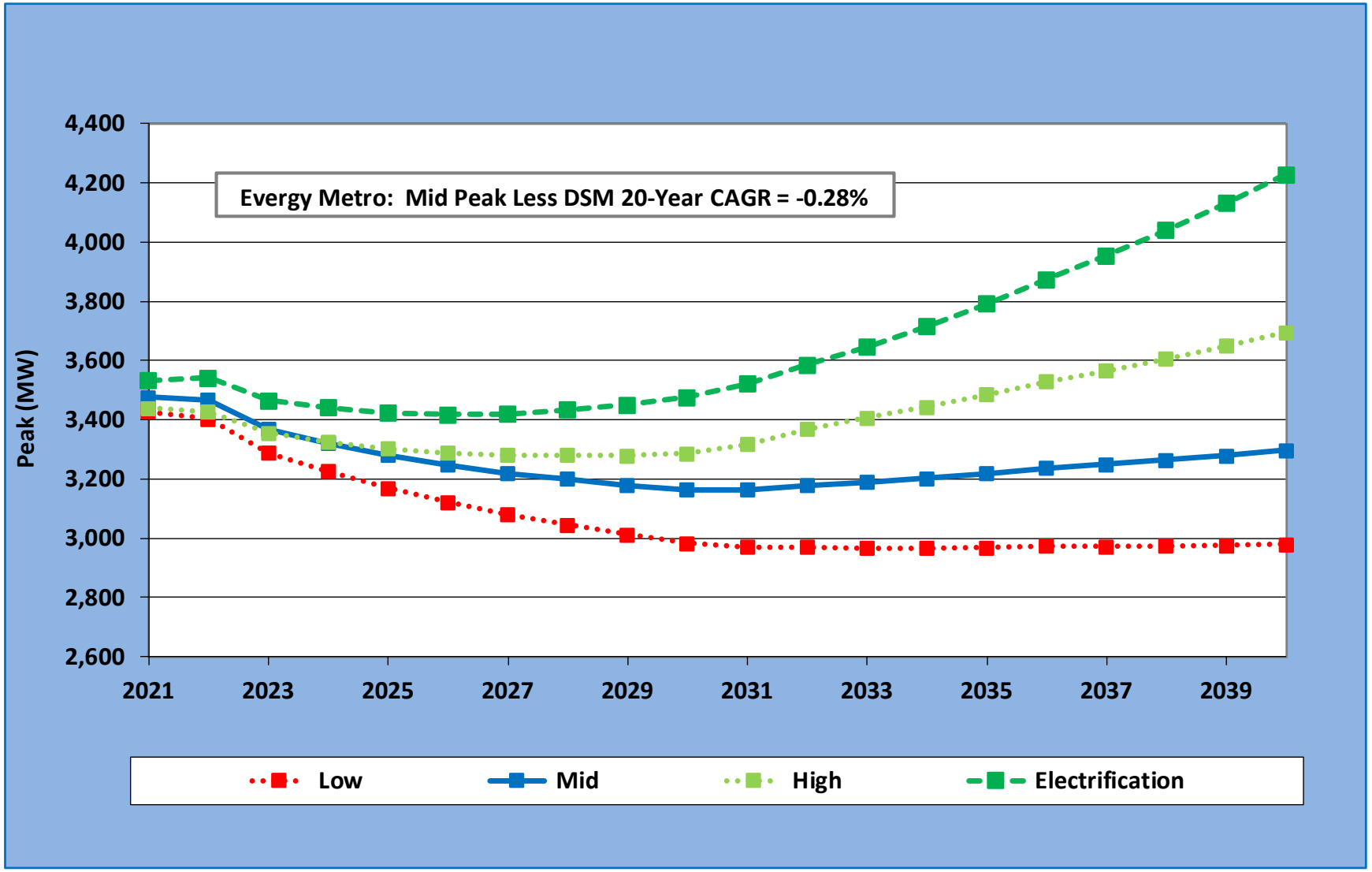
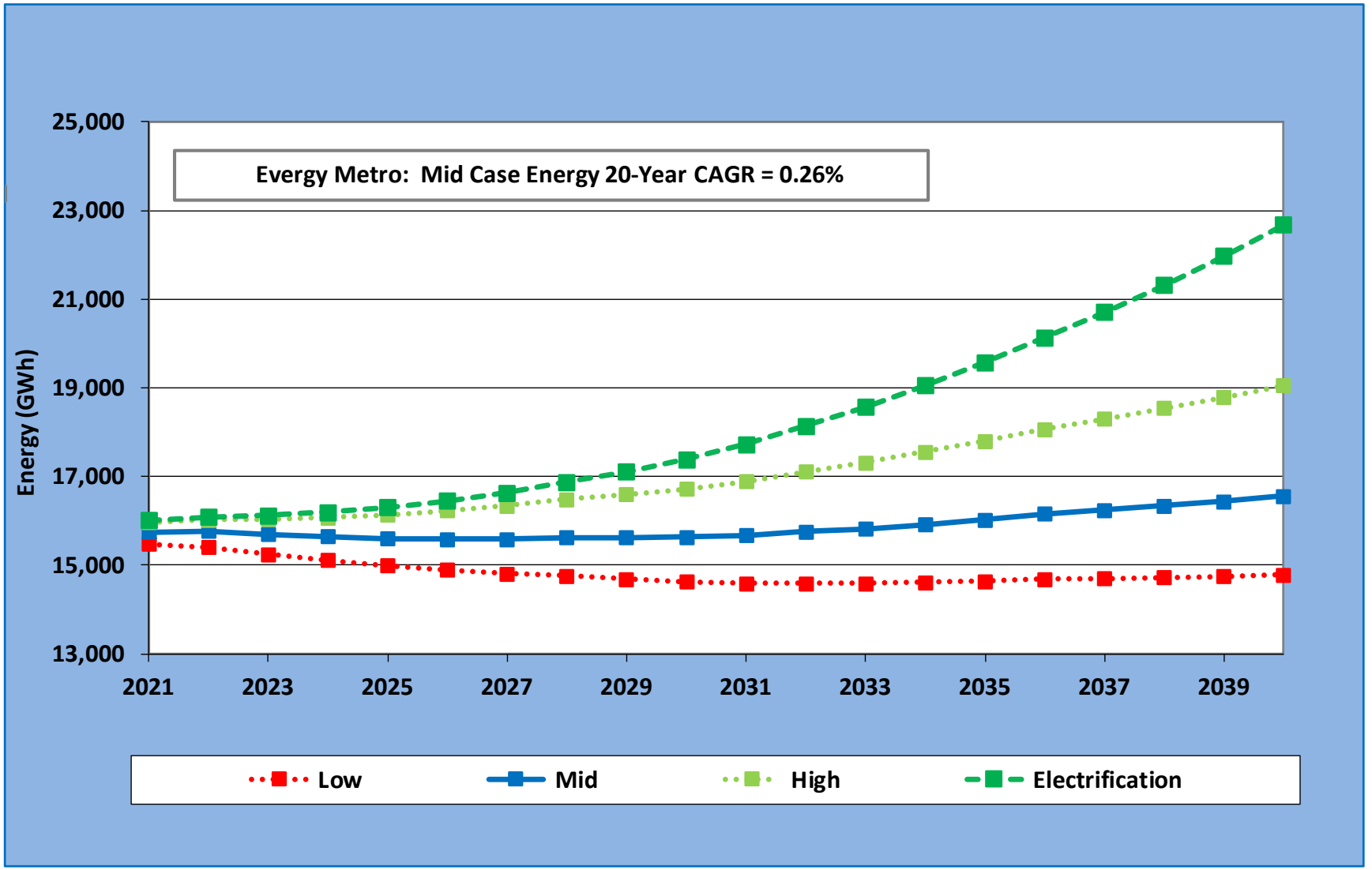
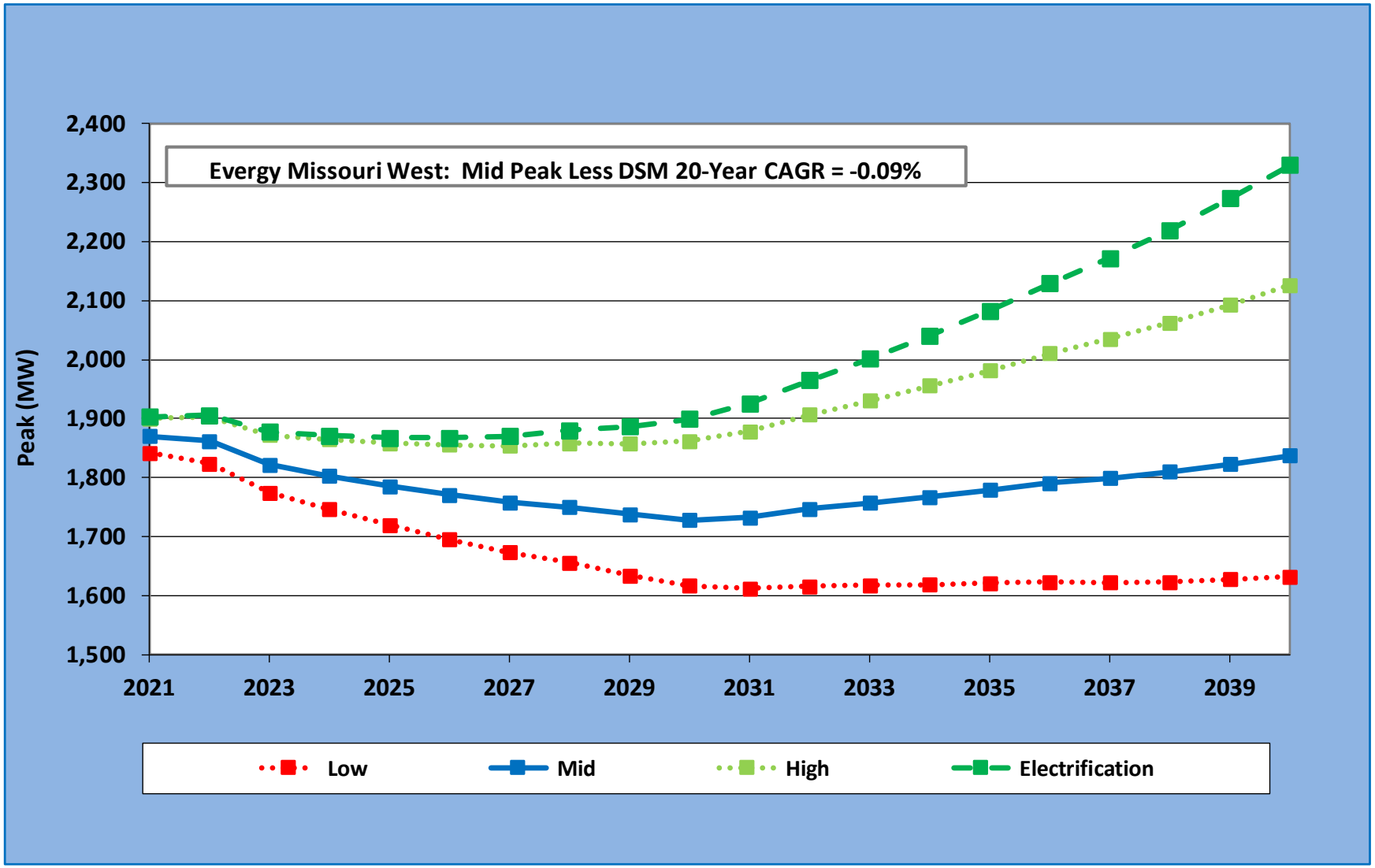
Evergy Metro - Peak Load Forecasts Less DSM



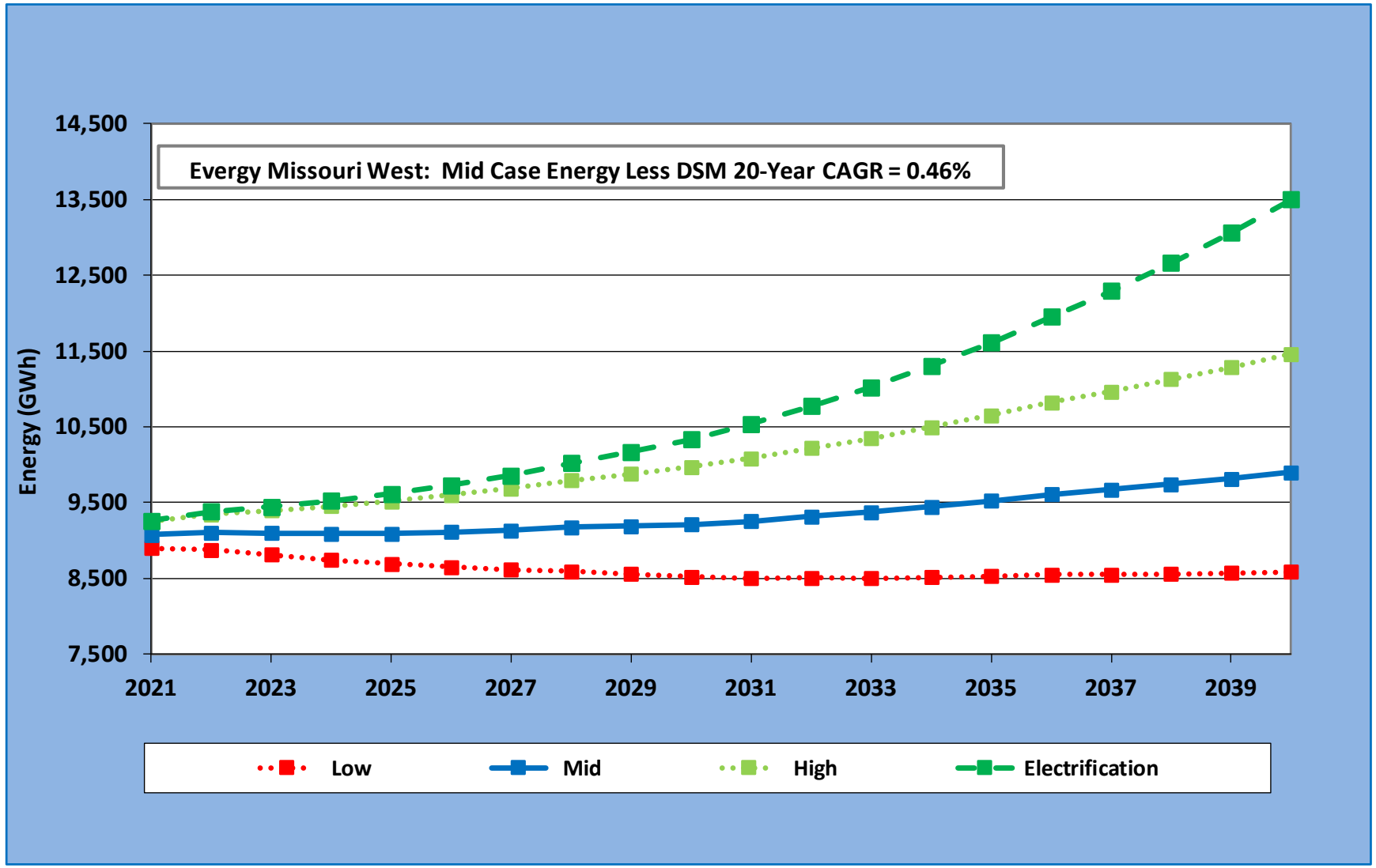
Evergy Metro - Energy Forecasts Less DSM



Evergy Missouri West - Peak Load Forecasts Less DSM



Evergy Missouri West - Energy Forecasts Less DSM



Annual Average SPP Energy Market Prices

Gas and CO_2 Scenarios

Annual Average SPP Energy Market Prices –
Gas and CO_2 Scenarios with High Renewable Penetration

Annual Average SPP Energy Market Prices –
Gas and CO_2 Scenarios with 50-Year Coal Plant Retirements

Develop Alternative Resource Plans

Laura Becker

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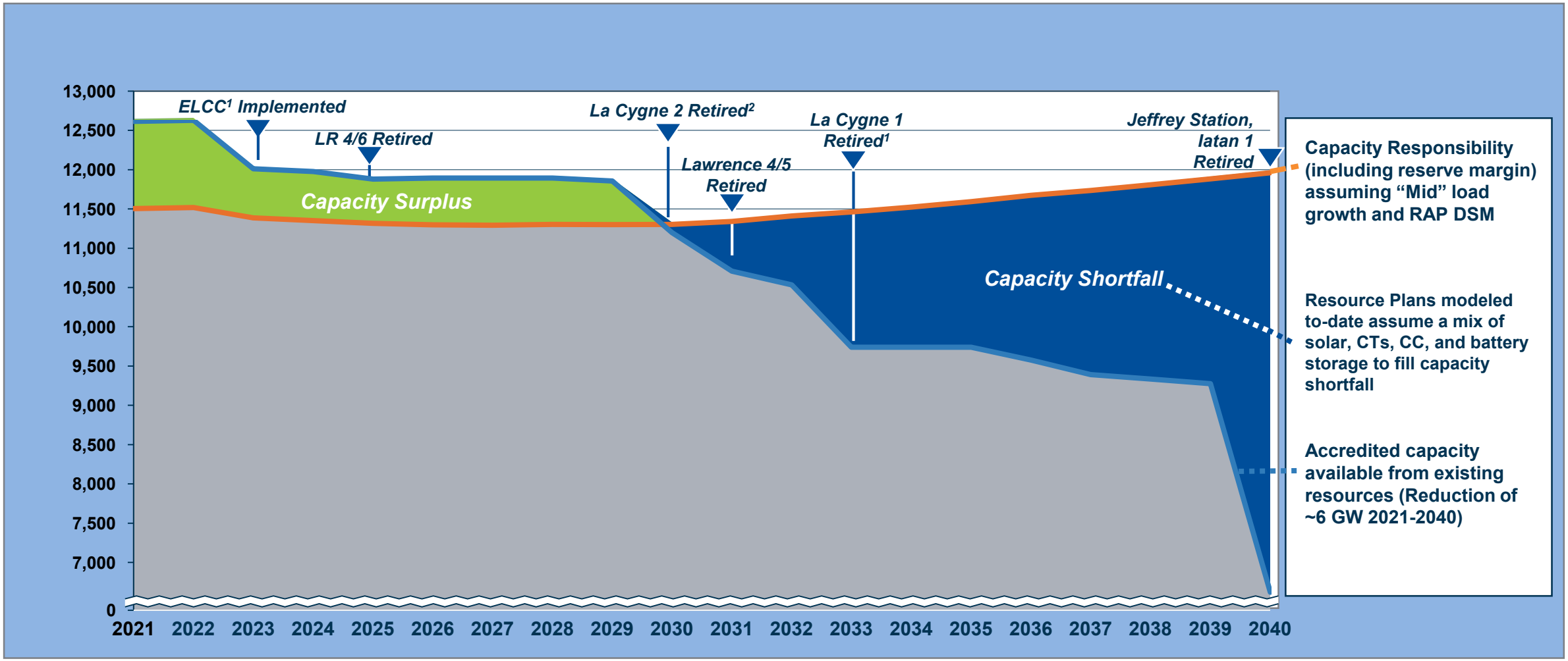
Alternative Resource Plan Capacity Balance Example

Evergy-Level, Assumes Retirement Dates Currently in Rates, MW



Note: Capacity reductions which aren't labeled are PPA expirations; Retirement dates included in rates for Hawthorn 5 and Iatan 2 are 2055 and 2070, respectively; 1) Effective Load Carrying Capability methodology for capacity accreditation within SPP; 2) Based on Evergy KS Central retirement date for La Cygne 1 & 2

Alternative Resource Plan Selection Methodology

- Additional Alternative Resource Plans developed since the October Stakeholder Meeting
  - 9 additional Evergy level plans
    - DSM – Realistic Achievable Potential (RAP) level
    - Hawthorn 5 late period retirement
    - Jeffrey 2 and 3 2030 retirement
    - Future combined cycle addition
    - Future battery storage addition
    - Additional solar 2031 and 2035
  - 27 Stand-Alone Utility plans (Evergy Metro, Mo West and Ks Central)
    - “Book Life” plans with and without early period retirement of various coal plants
    - DSM – Realistic Achievable Potential (RAP) and RAP- level
    - With and without 2022-23 solar additions

Test Critical Uncertain Factors & Create Scenarios

Laura Becker

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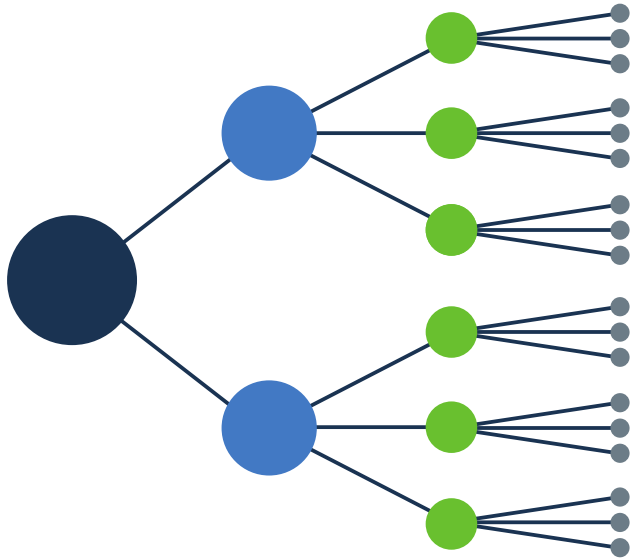
Critical Uncertain Factor Approach



Uncertain Factors

Analyzed individually to determine criticality (i.e., impact on Alternative Resource Plan ranking)

Scenarios

Constructed based on combinations of Critical Uncertain Factors (gas price, CO_2 pricing, load forecast, etc.)

Preliminary Uncertain Factors Evaluation

Uncertain Factor	Evaluated?	Critical?	Comments
Load Growth	✓	✓	Updated to model “Electrification” as high scenario
Interest Rate	✓	✗	
Legal Mandates	✓	✗	
Fuel Prices	✓	✓	Only Nat. Gas prices critical
New Gen Construction / Permitting	✓	✗	
Purchase Power	✓	✗	
Emission Allowance Pricing	✓	✓	Only CO_2 Prices Critical
Gen O&M costs	✓	✗	
Force Outage Rates	✓	✗	
DSM / DSR Load Impacts	✓	✗	
DSM / DSR Costs	✓	✗	
SPP Renewable Penetration	✓	✗	
SPP Coal Retirements	✓	✗	
BtM Solar / Storage Adoption	○	TBD	
Other potential uncertain factors	TBD	TBD	

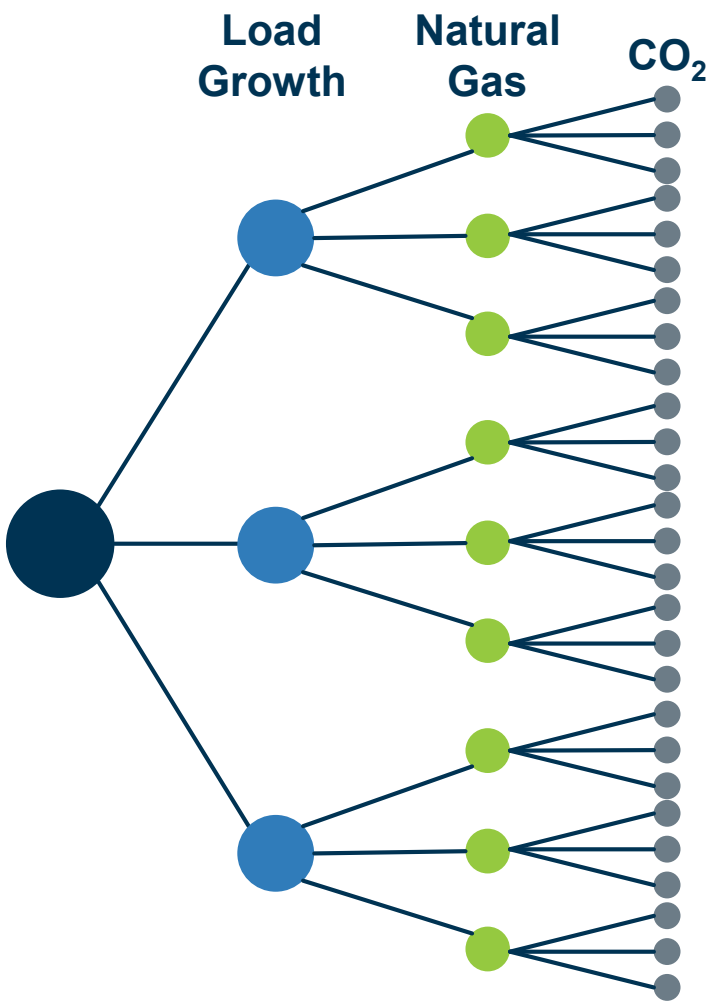
✓ **Evaluation complete**

○ **Evaluation planned, but not yet complete**

✓ **Currently considered “Critical”**

✗ **Not currently considered “Critical”**

Scenarios & Probabilities Modeled To-Date



Endpoint	Load Growth	Natural Gas	CO_2	Endpoint Probability
1	High	High	High	1.6%
2	High	High	Mid	3.1%
3	High	High	Low	1.6%
4	High	Mid	High	3.1%
5	High	Mid	Mid	6.3%
6	High	Mid	Low	3.1%
7	High	Low	High	1.6%
8	High	Low	Mid	3.1%
9	High	Low	Low	1.6%
10	Mid	High	High	3.1%
11	Mid	High	Mid	6.3%
12	Mid	High	Low	3.1%
13	Mid	Mid	High	6.3%
14	Mid	Mid	Mid	12.5%
15	Mid	Mid	Low	6.3%
16	Mid	Low	High	3.1%
17	Mid	Low	Mid	6.3%
18	Mid	Low	Low	3.1%
19	Low	High	High	1.6%
20	Low	High	Mid	3.1%
21	Low	High	Low	1.6%
22	Low	Mid	High	3.1%
23	Low	Mid	Mid	6.3%
24	Low	Mid	Low	3.1%
25	Low	Low	High	1.6%
26	Low	Low	Mid	3.1%
27	Low	Low	Low	1.6%

For each factor:
High – 25%
Mid – 50%
Low – 25%

Model Revenue Requirement & Other Key Metrics

Laura Becker

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Revenue Requirement Calculations

Net Present Value of Revenue Requirement (NPVRR) results for **Individual Scenarios**

Expected Value of NPVRR across all Scenarios

Combinations of Resource Retirements / New Generation / DSM over 20 years

Made up of Critical Uncertain Factors (e.g., may consist of different wholesale market prices)

Preliminary Evergy Results – No CO_2 Restrictions

**** Confidential ****

Lake Road 4/6 (97 MW/gas)
Hawthorn 5 (564 MW/coal)
Lawrence 4 (112 MW/coal)
Lawrence 5 (375 MW/coal)
LaCygne 1 (746 MW/coal)
LaCygne 2 (662 MW/coal)
Jeffrey 1 (663 MW/coal)
Jeffrey 2 (672 MW/coal)
Jeffrey 3 (669 MW/coal)
Iatan 1 (616 MW/coal)

Preliminary Evergy Results – Mid-CO_2 Costs

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Preliminary Evergy Results - High CO_2 Costs

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Preliminary Evergy Results – Expected Value

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Preliminary Metro Results – No CO_2 Restrictions

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Preliminary Mo West Results – No CO_2 Restrictions

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Findings from NPVRR Results to Date

**** Confidential ****

Next Steps

Analytical Next Steps

- Additional Alternative Resource Plans
  - Additional future renewable resources, including wind
  - Energy storage resource additions
  - Additional coal plant retirement timing
  - DSM Maximum Achievable Potential (MAP) plans
  - Grain Belt Express plans
- Other
  - Behind-the-meter solar and energy storage sensitivity testing
  - Re-evaluate SPP renewable penetration scenario impacts

Triennial IRP Development Timeline

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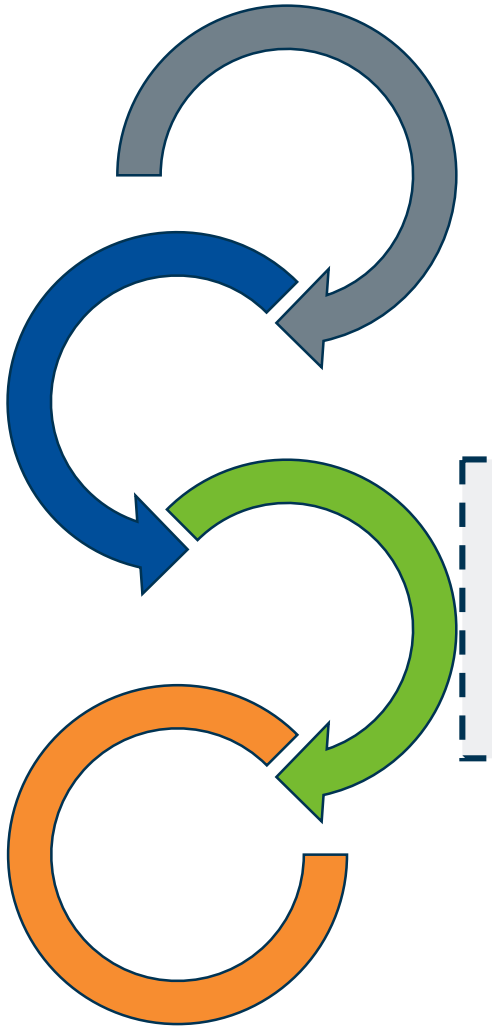
Q1 2021: Review updated results including detailed review of inputs outlined in IRP rules



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Next Steps

Follow up via email with any specific comments to

Sarah.Gott@evergy.com

before December 31st