





2021 Integrated Resource Plan

Stakeholder Workshop #1

Nov 10, 2020

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WELCOME

SAFETY MESSAGE

TECHNOLOGY

Microsoft-Teams check

OPENING COMMENTS

INTRODUCTIONS

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Meeting Protocols

The value of this process is in participation … please jump in!

We set aside time at the end of each section for Questions, and if you need clarification at any time, feel free to ask!

”Raise your hand” for comments and questions, we will try to get to you ASAP - We will not actively be monitoring Chat

Please use your video! Not a requirement and it

helps us to see who we are speaking with.

Mute mic when you don’t want to speak.

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Why are we here today?

Kickoff 2021 IRP Process

- Recap 2018 IRP
- Discuss lessons learned from last cycle and improvement opportunities
- Discuss high level plan for 2021 stakeholder meetings and feedback
- Overview Load Forecasting
- Engage with Stakeholders

What are the Goals of the IRP Process

INTEGRATED RESOURCE PLAN (IRP):

DEI's plan to provide safe, reliable and sustainable energy solutions for our Customers in Indiana.

- IRPs are submitted every three years
- Plan is created with stakeholder input
- 20-year look at how DEI can cost-effectively serve our customers
- Modeling and analysis culminate in a utility preferred resource portfolio

What is a preferred resource portfolio?

"'Preferred resource portfolio' means the utility's selected long term supply-side and demand-side resource mix that safely, reliably, efficiently, and cost-effectively meets the electric system demand, taking cost, risk, and uncertainty into consideration."

IURC RM #15-06, LSA Document #18-127
Link (PDF): https://www.in.gov/iurc/files/RM_ord_20181024141710007.pdf

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Agenda

10:00	Welcome & Introductions ✓
10:15	Review of the 2018 DEI IRP
10:45	Stakeholder feedback
11:15	Contemplated changes for 2021 IRP
11:45	Overview of future stakeholder meetings
12:00	Lunch Break
1:00	Load forecasting
2:00	Closing comments

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Review of 2018 IRP

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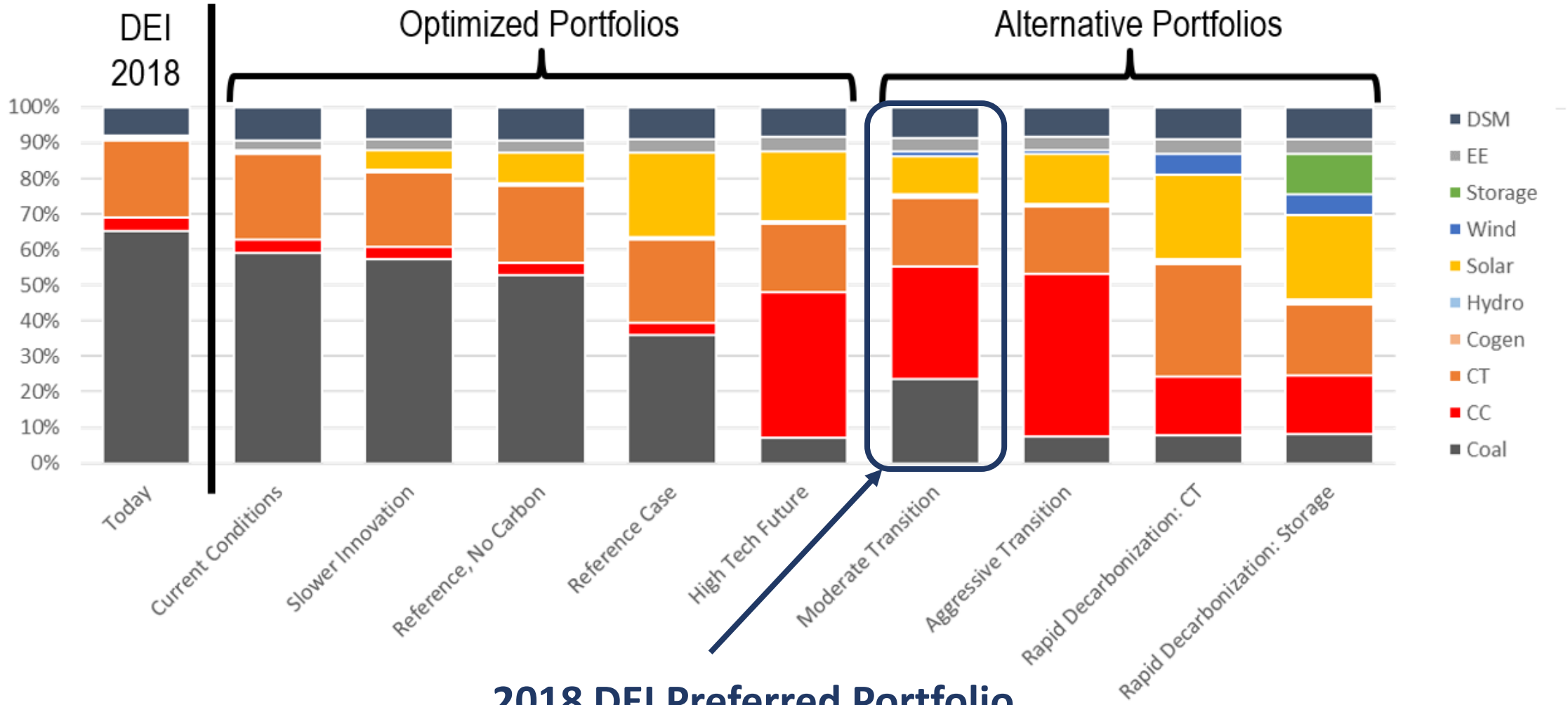
Review of 2018 IRP (Capacity Mix in 2037)



2018 DEI Preferred Portfolio

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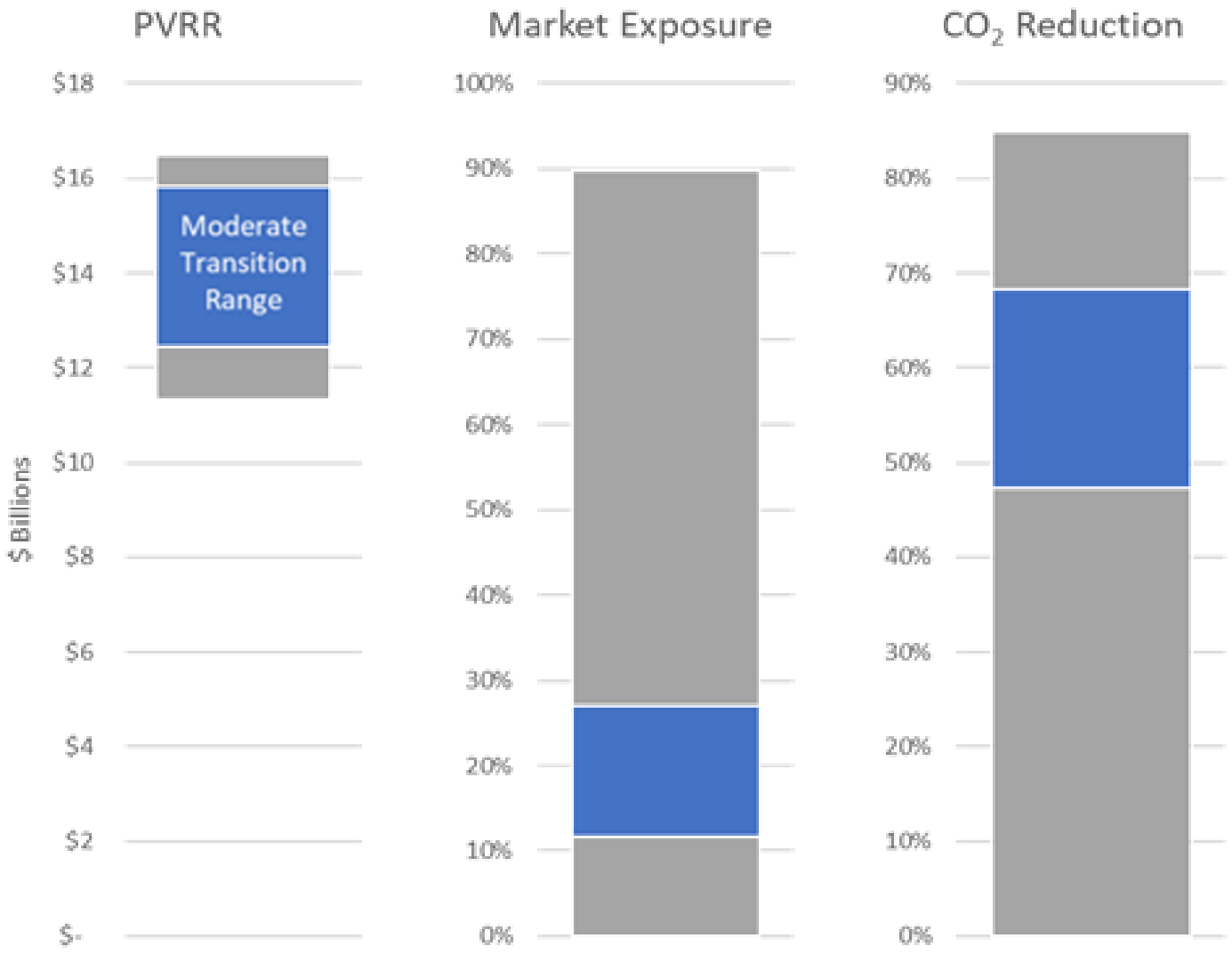
Portfolio Selection Criteria



Stakeholder Feedback from 2018 IRP

Feedback	Proposal for 2021 IRP Process
More info on Load Forecast	Included in Stakeholder meeting #1 and in IRP
Source of resource information	Combination of consultant, public, RFI data
More IRP improvement discussion	Will add more description in IRP
Stakeholder meeting process	Interrupted due to modeling issue; bringing modeling capability in-house; using experienced third-party facilitator to improve process
Faster renewable deployment	Add renewables when it makes sense balancing economics, risk an reliability needs
Retirements	Model for economic retirements
Annual limits on additions	Practicality (labor, supply chain, etc.)
Reliability	Need to address since an increase in intermittent resources and a reduction in grid supporting resources will require appropriate mitigations
Level of detail in IRP & Stakeholder meetings	Higher level in meetings and body of IRP; more detail in side meetings and appendices
Increased Transparency	Priority and model change is expected to help considerably

Comparison of 2018 IRP and 2015 SH Portfolios

RETIREMENTS	TOTAL MW	2021-25	2026-30	2031-35
2015 Stakeholder Distributed Generation Portfolio	3449 MW	Gall 2&4; Cay 1&2; Gib 1&5		Gib 2&3
2018 Preferred Portfolio	3191 MW	Gall 2&4	Gib 4; Cay 1-4	Gib 3&5; Noble CC
2015 Stakeholder Green Utility Portfolio	2189 MW	Gall 2&4; Cay 1&2; Gib 5		Gib 1

SOLAR & WIND ADDITIONS	TOTAL MW	2021-25	2026-30	2031-35
2015 Stakeholder Distributed Generation Portfolio	3410 MW	970 MW Solar; 800 MW Wind	420 MW Solar; 550 MW Wind	420 MW Solar; 250 MW Wind
2018 Preferred Portfolio	2050 MW	400 MW Solar; 100 MW Wind	550 MW Solar; 250 MW Wind	500 MW Solar; 250 MW Wind
2015 Stakeholder Green Utility Portfolio	1690 MW	380 MW Solar; 250 MW Wind	300 MW Solar; 300 MW Wind	210 MW Solar; 250 MW Wind

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Contemplated changes for 2021 IRP

Topic	Constraints and Approaches
Change to Encompass Model	Parallel testing in 2020
Eastern Interconnect Modeling	Feedback of evolving resources impact on power prices will be modeled
Risk Driven Scenarios	Stakeholder suggestion
Source data/Confidentiality	Publicly available data / Proprietary data / NDAs / RFI
UCAP Modeling	Stakeholder suggestion
Portfolio Tool	Allows stakeholders to adjust portfolio and assess possible resource mixes to serve actual system load for historical seasonal weeks
Edwardsport Retirement Analysis	Evaluate retirement/lay-up of power plant and/or gasifier
Issue RFI	Use as alternate data source
Modeling EE & DR as sub-portfolios	Stakeholder suggestion; new MPS being prepared
DERs	Define and discuss in meeting #2
T&D Impacts	Working on scenario specific T&D impacts

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Tentative timeline/topics for 2021 IRP

Meeting #/Date*	Topics
1) November 10	Introduction; Lessons learned/improvement opportunities; Load forecasting
2) Late January	Scenarios, AMI data & customer programs, DERs
3) March/April	Optimized portfolios & misc. topics
4) June/July	Modeling results; hybrid and stakeholder portfolios
5) August/September	Modeling results and sensitivities
6) October	Preferred portfolio

**Survey will be sent to stakeholders to provide suggestions and preferences*

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Lunch

Overview of Load Forecasting

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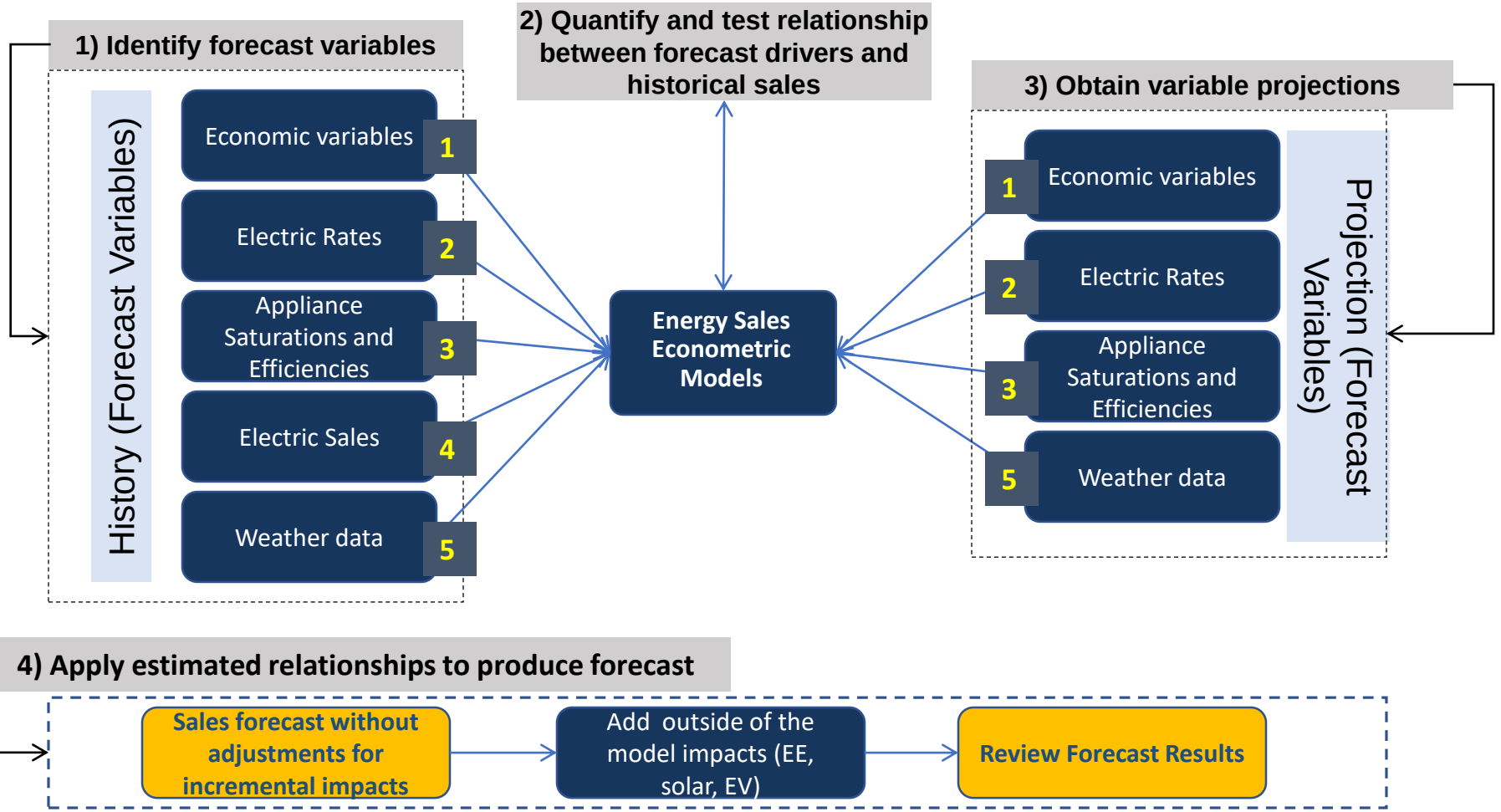
Energy Sales Forecast Methodology: High Level Process



Forecast Methodology: Energy Sales Forecast Drivers

Retail Load

System Load

Residential	Commercial	Industrial	Government	Wholesale
• Population • Income • Rates • Appliance Saturations & Efficiencies • Weather	• Gross Domestic Product • Retail Sales • Income • Rates • Weather	• Manufacturing Employment • Industrial Production Indices	• Employment • Rates • Weather	• Contract by Contract • Retail Growth

- Duke Indiana load forecast is based on a bottom-up approach (projections by customer class)
- Duke Energy uses economic, price, weather and efficiency variables to project energy sales
- The relationship between the sales drivers and energy sales is constantly evaluated

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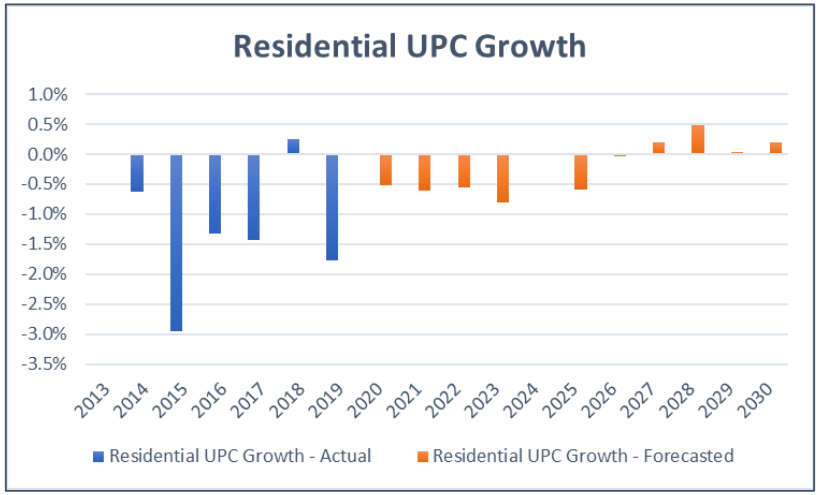
Residential



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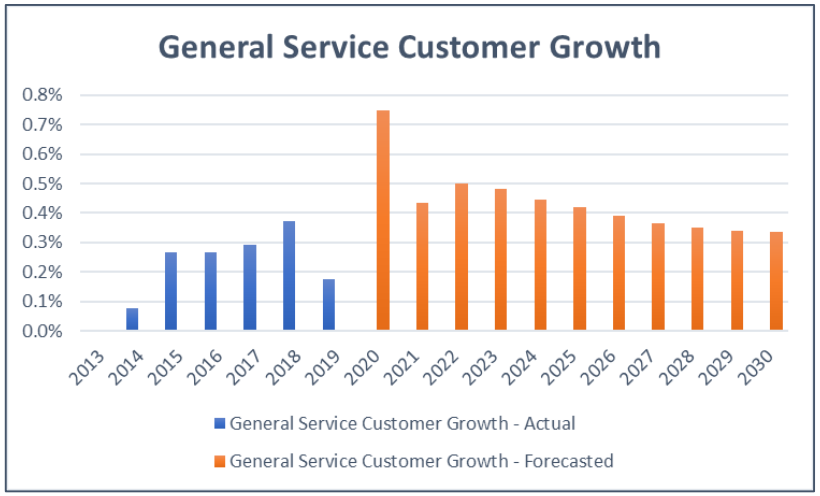
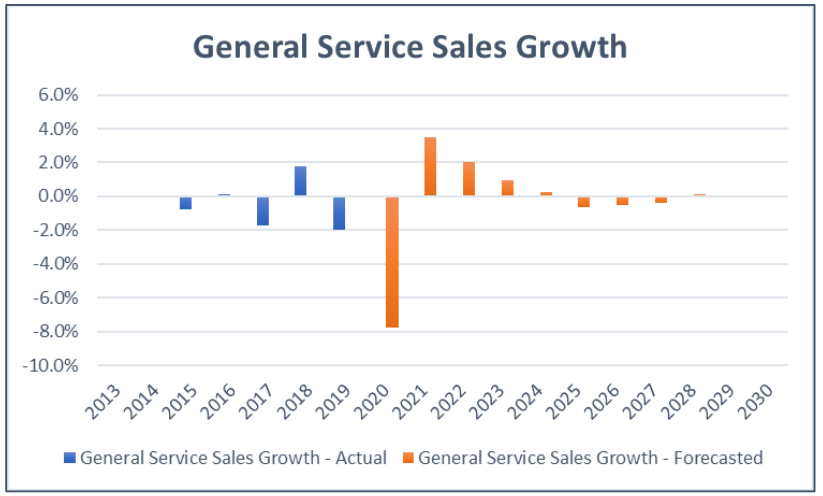
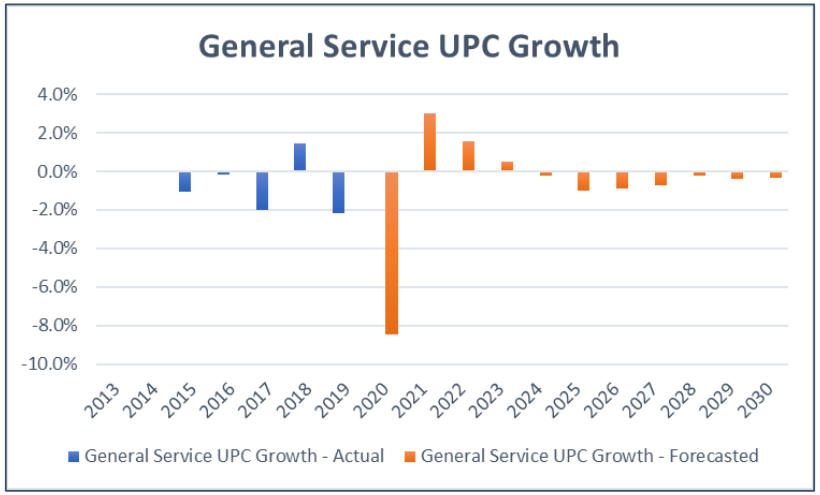
General Service

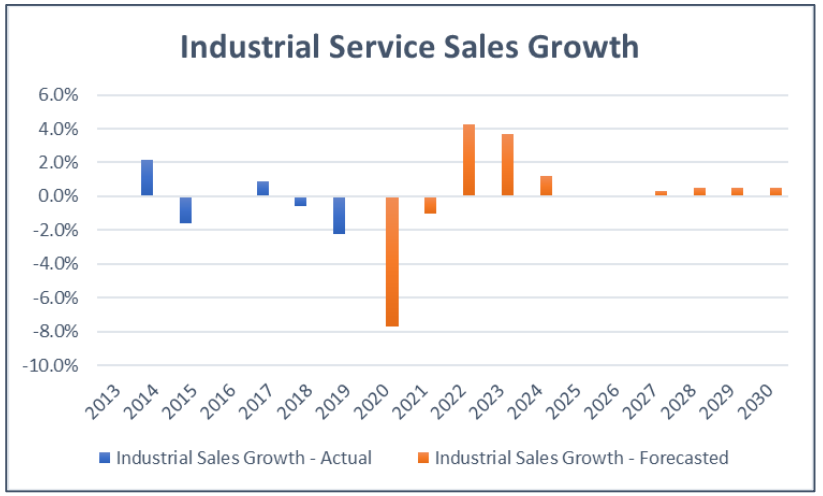


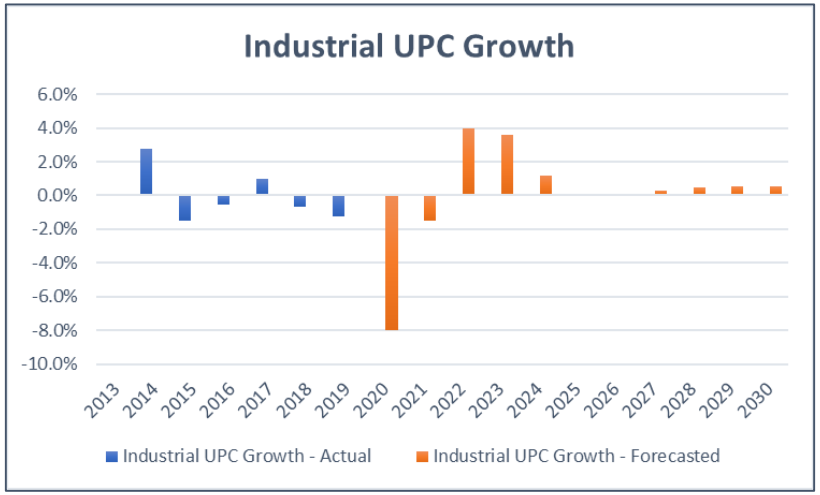




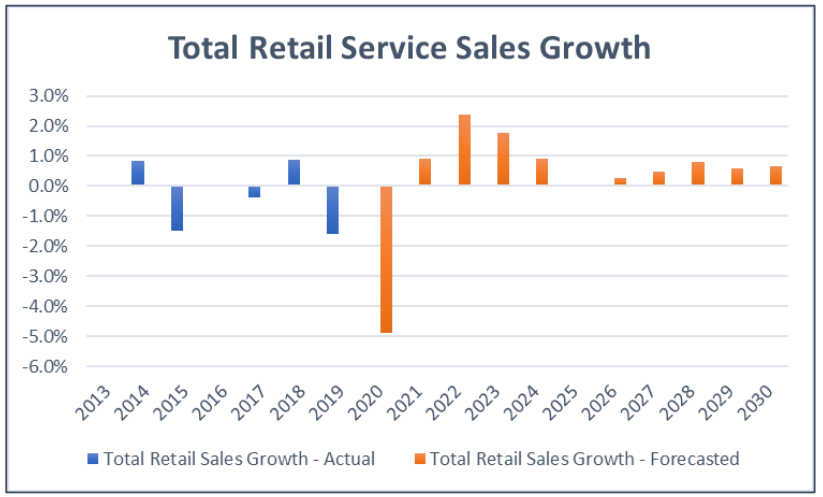
Industrial

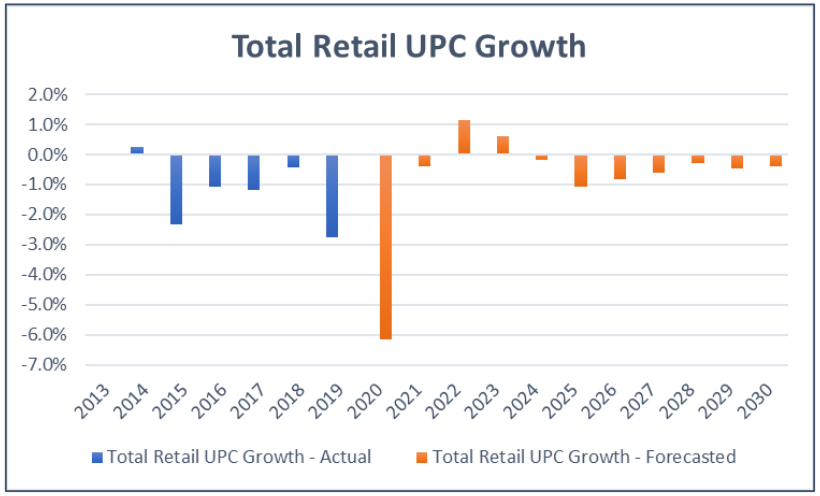

Industrial Customer Growth
0.6%
0.4%
0.2%
0.0%
-0.2%
-0.4%
-0.6%
-0.8%
-1.0%
-1.2%
2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
Industrial Customer Growth - Actual
Industrial Customer Growth - Forecasted


Industrial Service Sales Growth
6.0%
4.0%
2.0%
0.0%
-2.0%
-4.0%
-6.0%
-8.0%
-10.0%
2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
Industrial Sales Growth - Actual
Industrial Sales Growth - Forecasted


Industrial UPC Growth
6.0%
4.0%
2.0%
0.0%
-2.0%
-4.0%
-6.0%
-8.0%
-10.0%
2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
Industrial UPC Growth - Actual
Industrial UPC Growth - Forecasted

Total Retail





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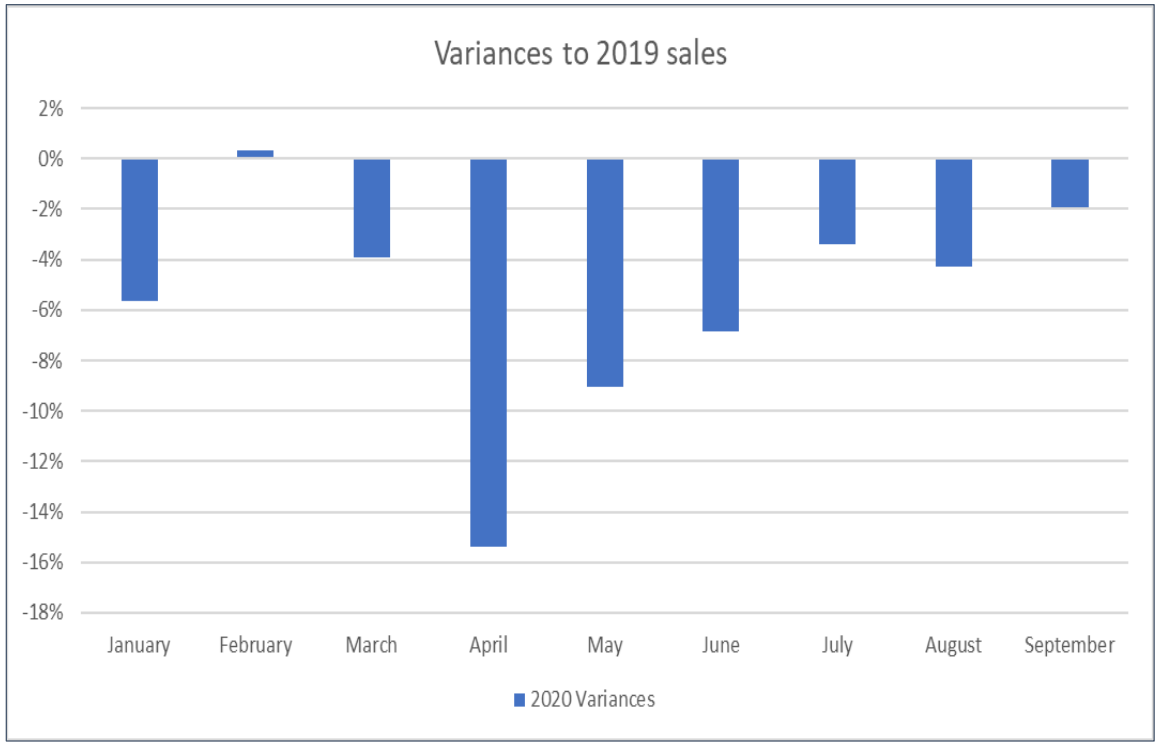
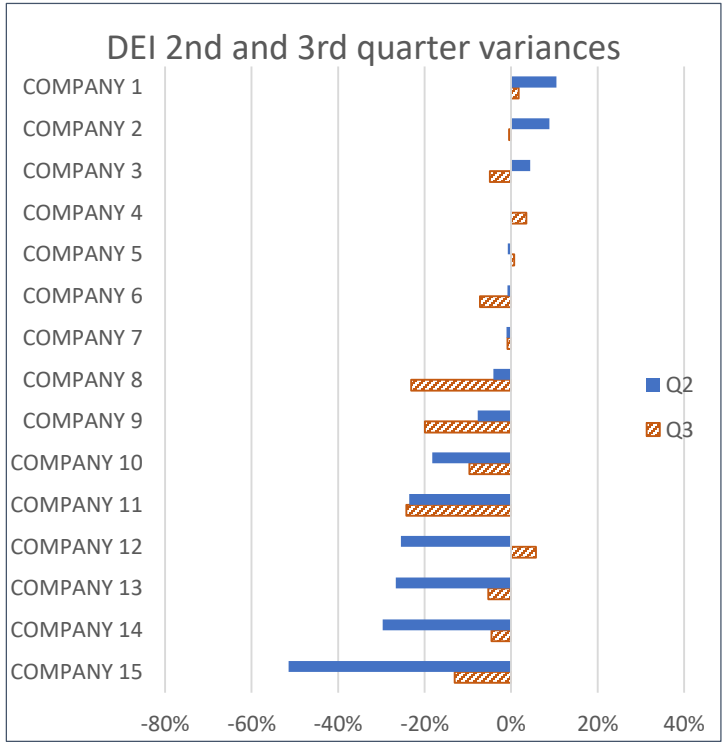
2020 Monthly Sale Variances Compared to 2019 / Covid Impacts on Large Customer Load

2020 MONTHLY SALE VARIANCES COMPARED TO 2019



COVID IMPACTS ON LARGE CUSTOMER LOAD



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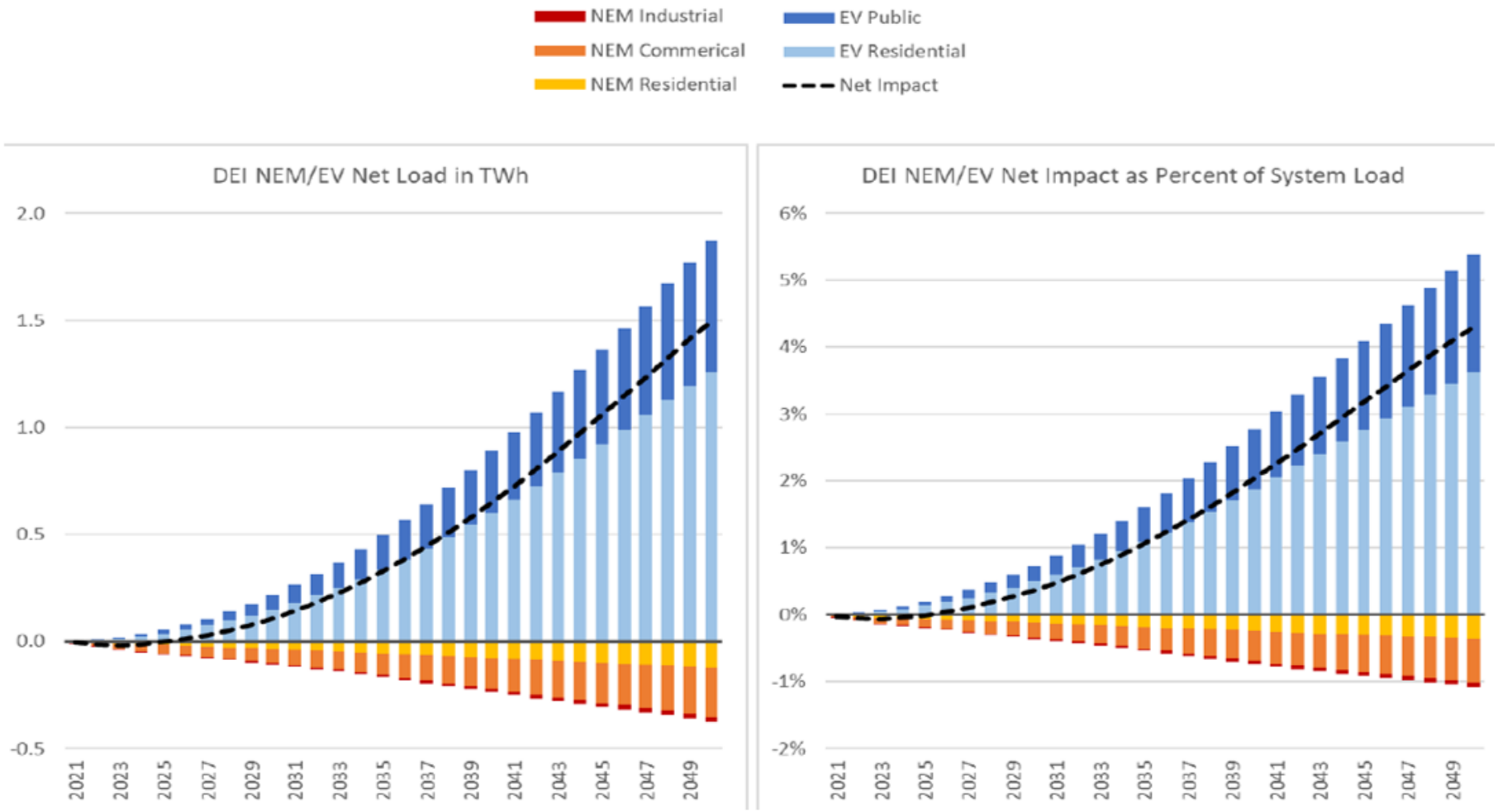
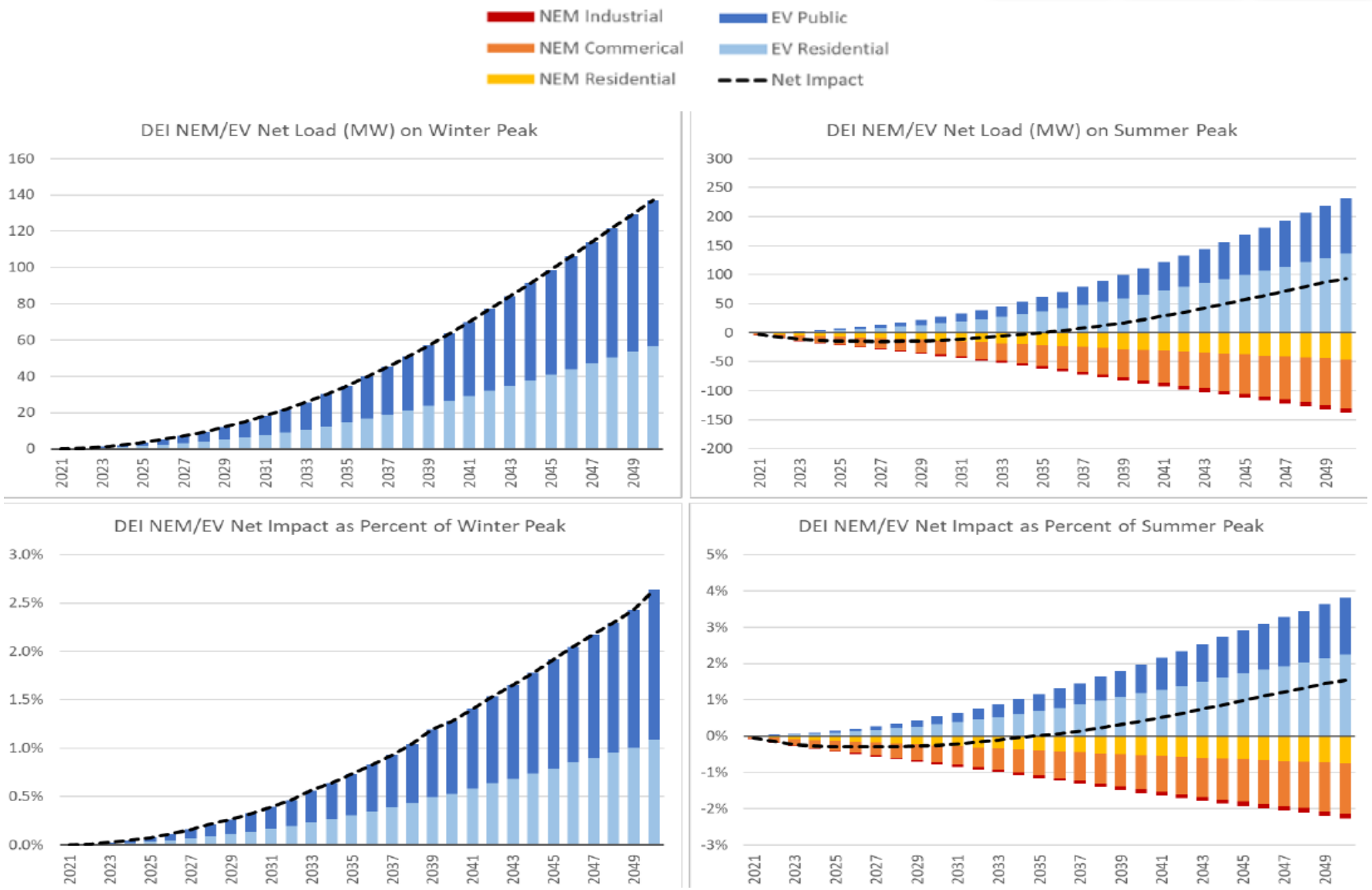
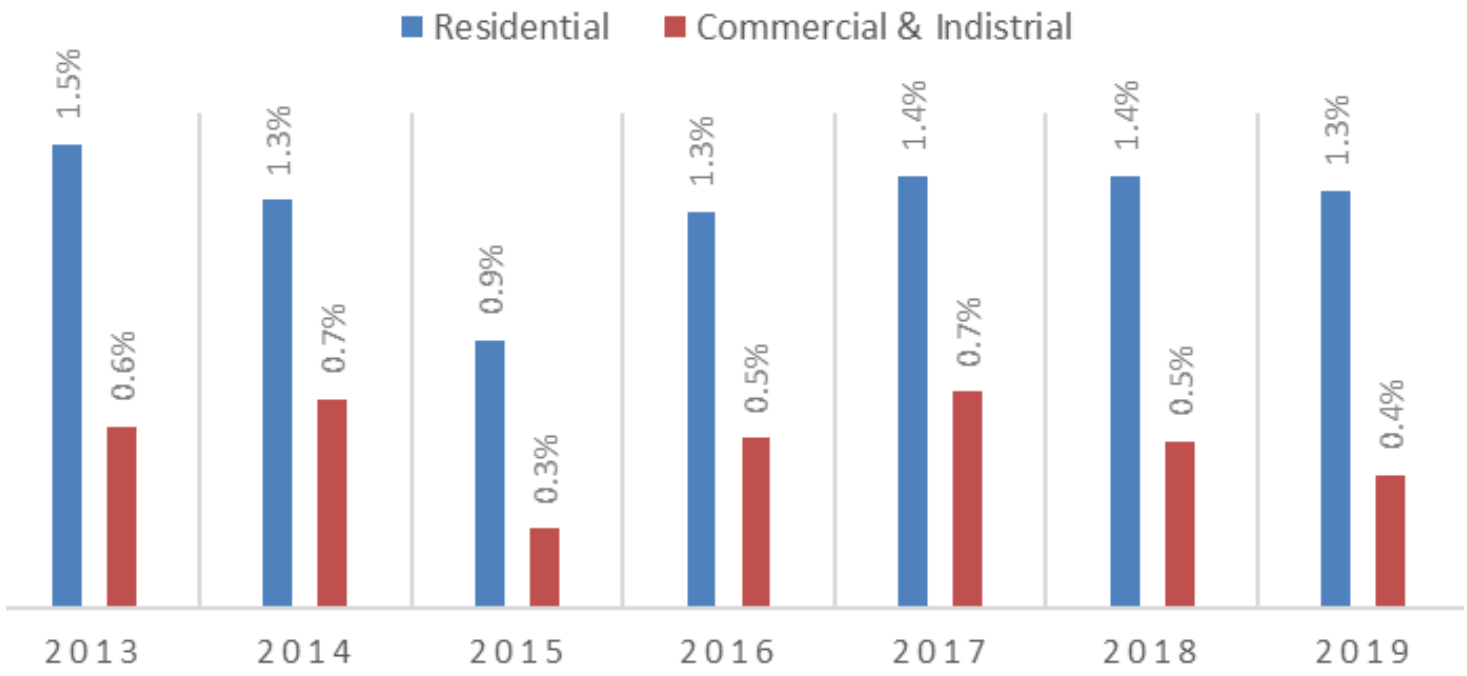
Net Impact to System Load – EV & NEM



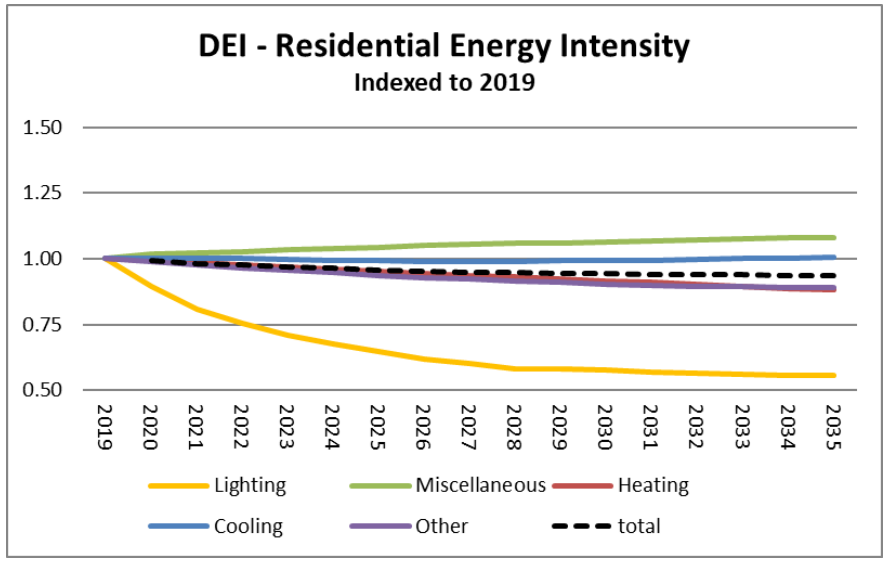
Net Impact to Peak – EV & NEM

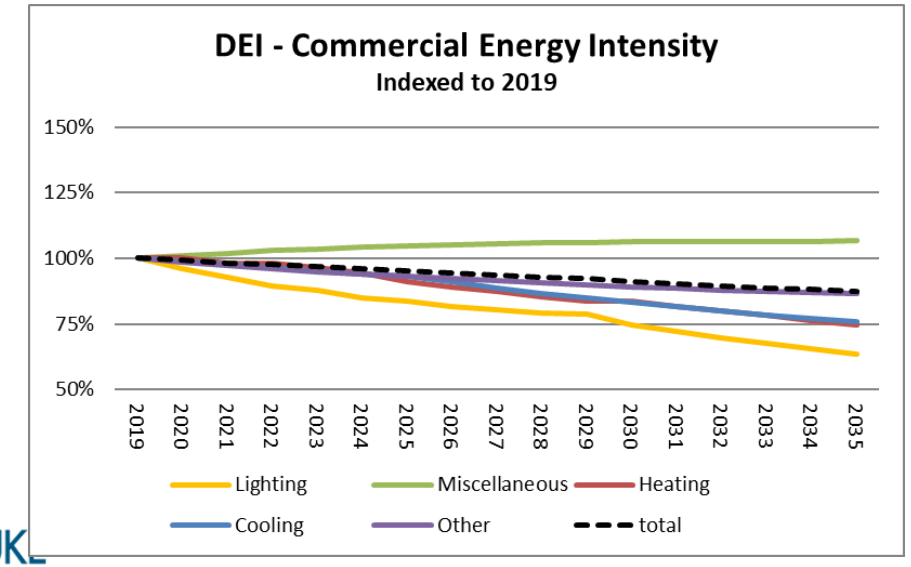


EIA Form 861 – Annual Incremental EE Savings



DEI – Residential and Commercial Energy Intensity





Heating

- Furnaces
- Heat Pumps
- Furnace Fans
- Sectional Heat

Cooling

- Central Air
- Heat Pumps
- Room Air

Other

- Water Heaters
- Kitchen Appliances
- Microwave Ovens
- Washer / Dryer
- Security Systems
- Hair dryers

Miscellaneous

- TV's, DVR's, & related equip.
- PC's & related equipment
- miscellaneous electronics
- humidifiers
- plug-ins
- digital pic frames
- pool pumps
- etc.

Moody's Forecast Assumptions

Key Assumptions:

- We assume 16.2 million COVID-19 cases and the seven-day moving average of new confirmed cases peaks at 65,363 on August 14.
- The Fed keeps the target range for the fed funds rate at 0% to 0.25% into 2023. The Fed's emergency lending facilities remain operational through the end of this year, and tapering of quantitative easing does not begin until 2021.
- The U.S. trade-weighted dollar remains strong while WTI crude oil prices remain low, hovering between $35 and $40 per barrel.
- The baseline assumes $1.4 trillion in additional stimulus, with it almost evenly split between aid for state and local governments and for unemployment insurance benefits.

Key Risks:

- A second wave of COVID-19 impacts a large portion of the U.S., causing people to self-quarantine or states to shut down nonessential businesses again.
- The next round of fiscal stimulus is delayed and/or does not include aid to state and local governments.
- Lawmakers fail to extend the expansion of unemployment insurance benefits that is currently scheduled to end July 21.
- A larger than expected wave in small-business bankruptcies prevents the unemployment rate from falling as quickly as expected.
- Financial market conditions tighten significantly.
- Political and economic tensions between the U.S. and China intensify.

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Closing Comments, Stakeholder Comments

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Wrap Up

- Interest level in an evening Q&A
- Meeting survey to be sent out in the next week to attendees
- Comments can also be sent to:
  - Scott at: scott.park@duke-energy.com
  - Stewart at: stewart@vanry.com
- Meeting summary and other materials will be posted on website by Nov 17th
  - https://www.duke-energy.com/home/products/in-2021-irp-stakeholder
- Next workshop expected in late January

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Acronyms

AMI	Advanced Metering Infrastructure
DR	Demand Response
DER	Distributed Energy Resource
DEI	Duke Energy Indiana
EV	Electric Vehicles
EE	Energy Efficiency
EIA	Energy Information Administration
IURC	Indiana Utility Regulatory Commission
IRP	Integrated Resource Plan
MW	Megawatt
NEM	Net Energy Metering
NDA	Non-disclosure agreement
PVRR	Present Value of Revenue Requirements
RFI	Request for Information
T&D	Transmission and Distribution
UCAP	Unforced Capacity
UPC	Usage per Customer

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