Vectren Integrated Resource Plan (IRP) Stakeholder Meeting

Gary Vicinus – Meeting Facilitator
Pace Global – Managing Director of Consulting Practice
November 29, 2016

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Energy Delivery

Meeting Guidelines

1. Please hold most questions until the end of each presentation. Time will be allotted for questions following each presentation. (Clarifying questions about the slides are fine throughout)
2. For those on the webinar, we will open the (currently muted) phone lines for questions within the allotted time frame. You may also type in questions via the chat feature. Only questions sent to 'All-Entire Audience' will be seen and answered during the session.
3. At the end of the presentation, we will open up the floor for "clarifying questions," thoughts, ideas, and suggestions.
4. There will be a parking lot for items to be addressed at a later time.
5. Vectren does not authorize the use of cameras or video recording devices of any kind during this meeting.
6. Questions asked at this meeting will be answered here or later.
7. Unfortunately, there is no more time for additional questions at IRP@vectren.com prior to filing.

Agenda

1:00 p.m.	Sign-in/Refreshments	
1:30 p.m.	Welcome, Safety Message, and Recap	Gary Vicinus, Pace Global – Managing Director of Consulting Practice
2:00 p.m.	Presentation of the Preferred Portfolio	Carl Chapman, Vectren Chairman, President and CEO
2:30 p.m.	Existing EPA Regulations	Angila Retherford – Vectren Vice President of Environmental Affairs and Corporate Sustainability
2:40 p.m.	Optimization Modeling Results and Portfolio Development	Matt Lind, Burns & McDonnell – Associate Project Manager
3:10 p.m.	Break	
3:20 p.m.	Risk Analysis Results	Gary Vicinus, Pace Global – Managing Director of Consulting Practice
4:10 p.m.	Stakeholder Questions and Feedback	Vectren Panel
4:30 p.m.	Adjourn	

CEO = Chief Executive Officer

Vectren Commitments for the 2016 IRP

- ✓ Constructed scenarios (possible future states) with coordinated data inputs with a well-reasoned narrative
- ✓ Conducted a probabilistic risk analysis to explore the outer bounds of probability
- ✓ Future utility sponsored energy efficiency was modeled as a resource (not built into the load forecast)
- ✓ Evaluated if retirement made sense for any of Vectren's existing coal generating units within the 20 year time frame under each scenario
- ✓ Renewable options were fully considered in this analysis
- ✓ Actively monitoring Combined Heat and Power (CHP) developments and included CHP as a resource option
- ✓ Considered conversion and repower of coal units to gas
- ✓ Updated the IRP document format to be more readable

IRP = Integrated Resource Plan

Recap of Stakeholder Engagement

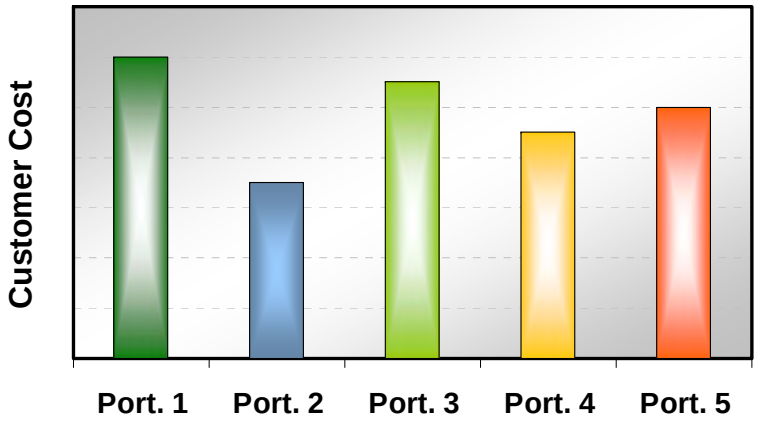
- February 3, 2016 - Participated in the Joint Utilities IRP Stakeholder Education Session with other Indiana investor-owned utilities
- April 7, 2016 - Vectren Public IRP Stakeholder Meeting
  - Vectren IRP Process Overview
  - Discussion of Uncertainties
  - Long-term Energy and Demand Forecast
  - Customer-Owned Distributed Generation
  - 2016 IRP Technology Assessment Generation Resource Alternatives
  - Generation Retrofit Alternatives
  - Energy Efficiency Modeling Discussion
- July 22, 2016 - Vectren Public IRP Stakeholder Meeting
  - Environmental Compliance
  - Base Case/Modeling Inputs
  - Busbar Analysis and Optimization Modeling
  - Scenario Development
  - Stakeholder Input to Portfolio Selection
- October 14, 2016 - Vectren Energy Efficiency Modeling Information Session
  - Met with the DSM oversight board and IURC staff. Webinar open for all stakeholders

DSM = Demand Side Management
IURC = Indiana Utility Regulatory Commission
IRP = Integrated Resource Plan

Vectren's Approach Builds on Traditional Approach

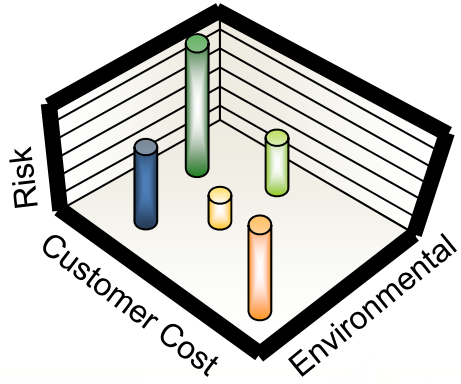
Traditional Approach

- Focuses on minimizing customer costs
- Portfolio evaluation is one-dimensional

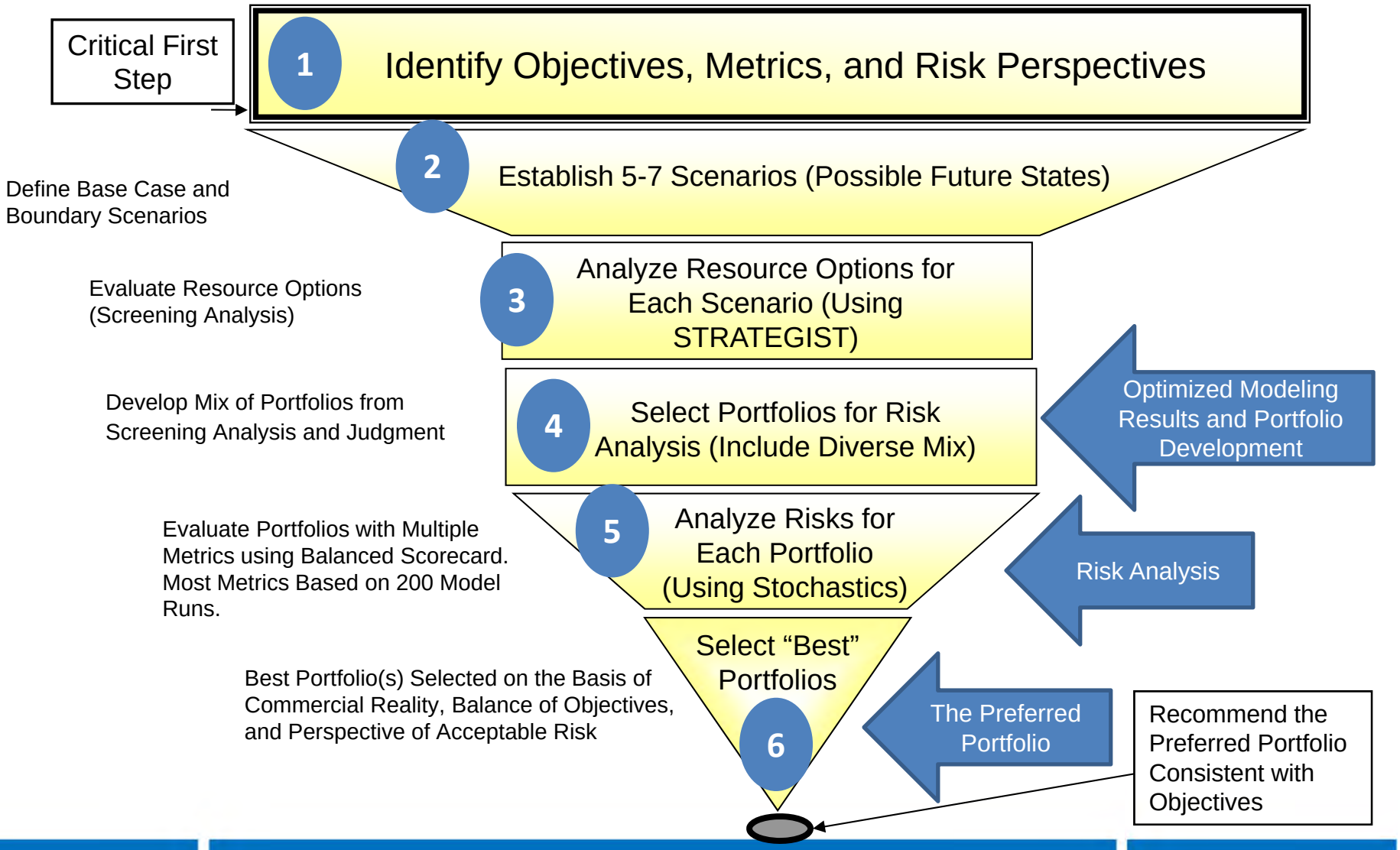


Vectren Approach

- Focuses on the simultaneous evaluation of multiple objectives and tradeoffs
  - Maintain reliability
  - Minimize rate/cost to customers
  - Mitigate risk to Vectren customers and shareholders
  - Provide environmentally acceptable power leading to a lower carbon future
  - Include a balanced mix of energy resources
  - Minimize negative economic impact to the communities that Vectren serves



Vectren's Structured Analysis



The Preferred Portfolio

Carl Chapman – Vectren Chairman, President and CEO

CEO = Chief Executive Officer

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Existing Coal Fleet

- Through investments in emissions control equipment over the past 15 years, Vectren's power system became one of the best controlled for emissions in the Midwest
- Vectren has reduced carbon emissions by 31% between 2005 and 2015

	FB Culley 2	FB Culley 3	Warrick 4	AB Brown 1	AB Brown 2
In Service	1966	1973	1970	1979	1986
MW (net)	90	270	150	245	245
NO_X	Low NO_X Burner	SCR	SCR	SCR	SCR
SO_2	FGD	FGD	FGD	FGD	FGD
PM	ESP	FF	ESP	FF	ESP
MATS	Shared w/ Unit 3	Injection	Injection	Injection	Injection
SO_3		Injection	Injection	Injection	Injection

SO_2 = Sulfur Dioxide MW = Megawatt FF = Fabric Filter
NOX = Nitrogen Oxide ESP = Electrostatic Precipitator SO_3 = Sulfur Trioxide
SCR = Selective Catalytic Reduction MATS = Mercury Air Toxics Standards
PM = Particulate Matter FGD = Flue Gas Desulfurization

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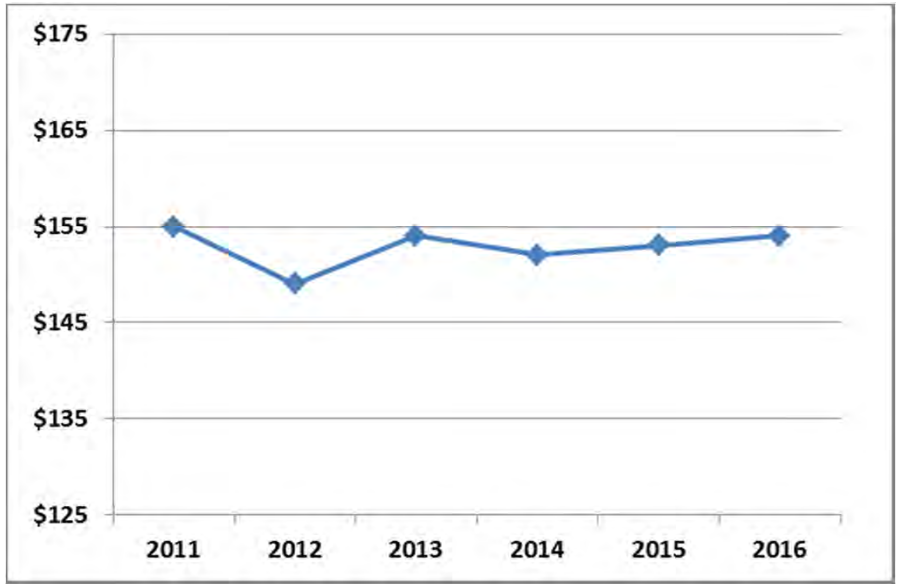
Residential electric bills have remained flat

Electric billing history (weather normalized, 1,000 kWh per month)

Year	Monthly billing amount
2011	$155
2012	$149
2013	$154
2014	$152
2015	$153
2016	$155

Source: IURC electric bill survey



Vectren has not filed a base rate case in 6 years.

IURC = Indiana Utility Regulatory Commission
kWh = Kilowatt Hour

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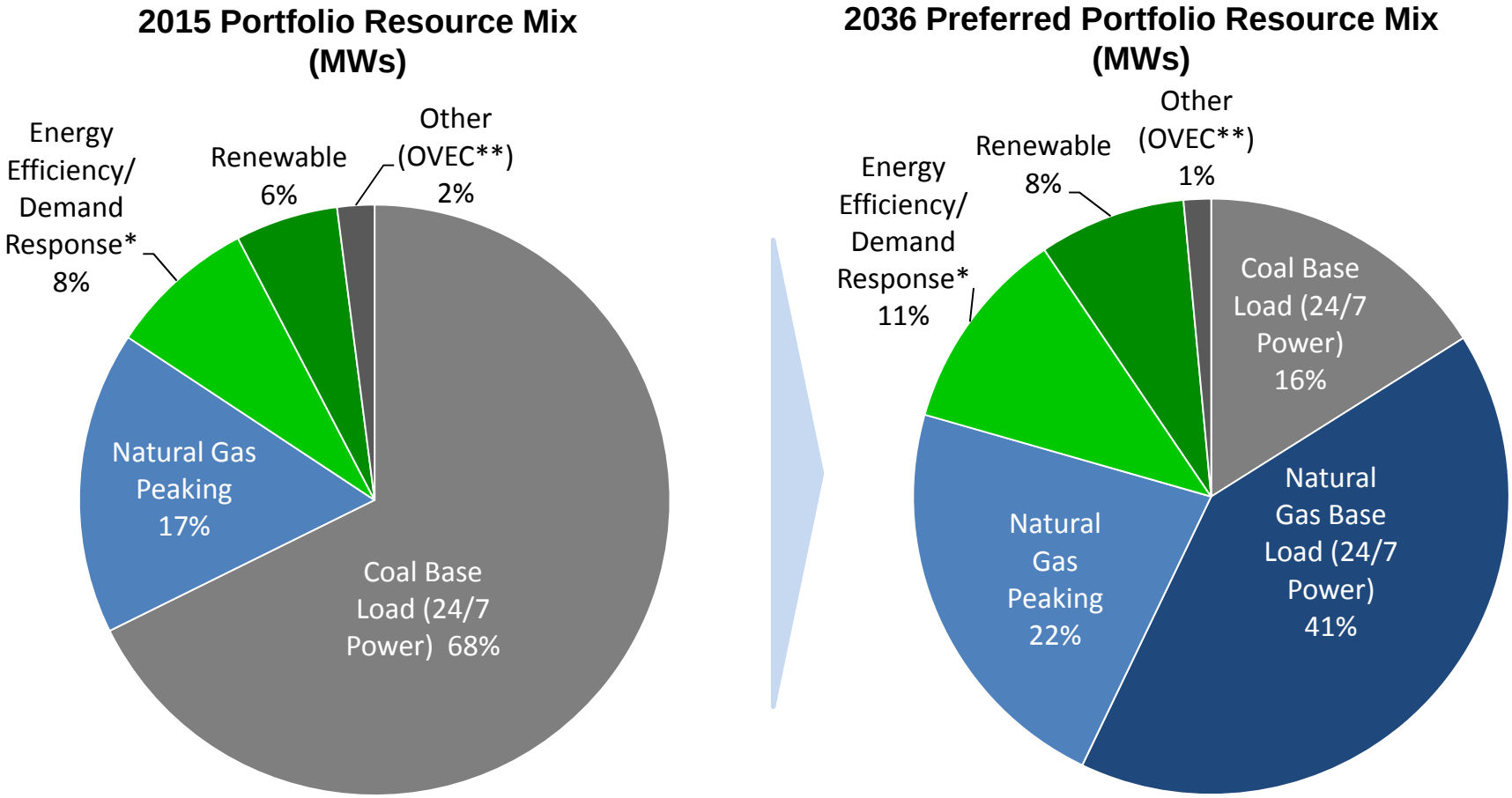
Vectren Preferred IRP Portfolio Resource Mix



*Cumulative Demand Response & Net Energy Efficiency
**Vectren's 1.5% ownership of Ohio Valley Electric Corporation (OVEC) coal units. Per contractual obligations, all portfolios include OVEC.

MW = Megawatt
IRP = Integrated Resource Plan

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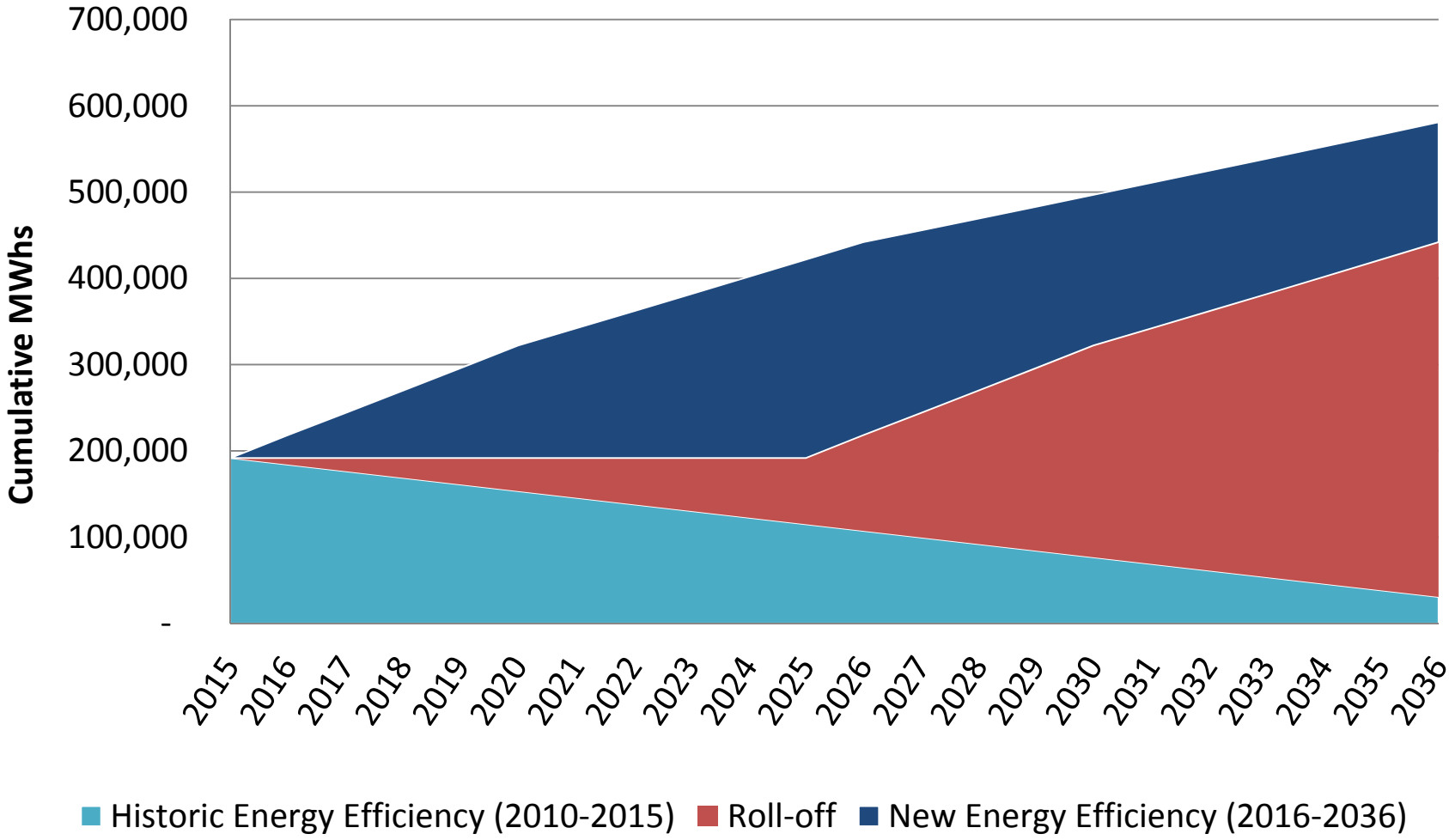
Cumulative Energy Efficiency MWhs in the Preferred Portfolio



Roll-off = Portion of Energy Efficiency savings no longer credited to Vectren
MWh = Megawatt Hour

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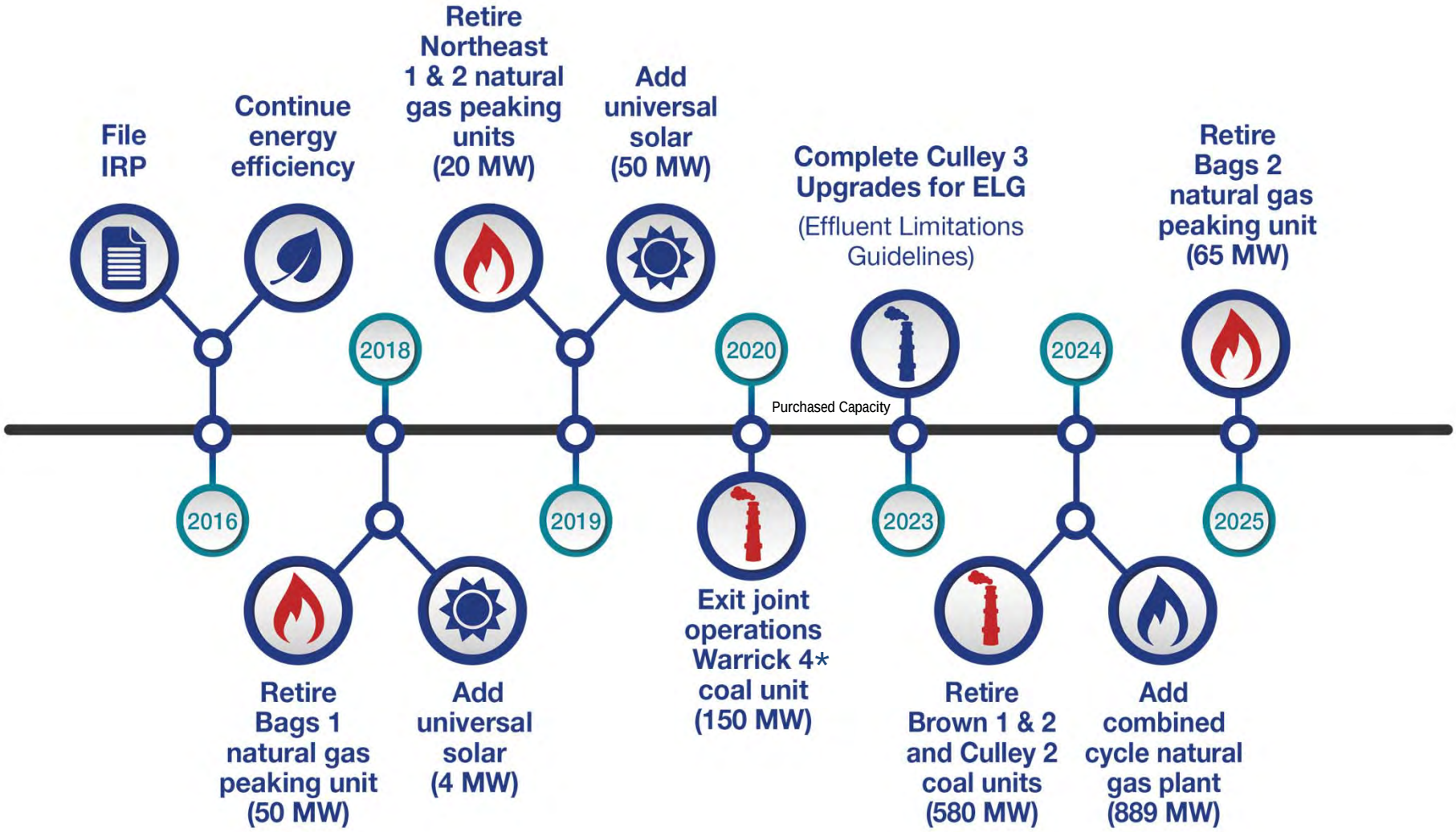
Vectren's Preferred Portfolio Based on Current Modeling



*Warrick 4 jointly owned with Alcoa, which is in the midst of transition. We continue to discuss the future of Warrick 4 with Alcoa.

MW = Megawatt
IRP = Integrated Resource Plan
Bags = Broadway Avenue Gas Turbines

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Preferred Portfolio with Accelerated Renewables Provides Benefits to Vectren Customers and Other Stakeholders

- Is among the best performing portfolios across multiple measures on the balanced scorecard
- Is among the lower cost portfolios (within 4 percent of the lowest cost portfolio)
- Leads to a lower carbon future – Achieves almost 50 percent reduction in carbon (base year 2012) by 2024, which exceeds the Clean Power Plan (CPP) requirements - carbon emissions reduction from 2005 levels would be almost 60 percent
- Brings renewables into the portfolio by 2019. Renewables and ongoing Energy Efficiency account for approximately 20% of total capacity by 2036
- Provides low-cost peaking generation through duct-firing that enhances opportunities for economic development and wholesale sales, which lowers customer bills
- Avoids reliance on a single fuel and provides a balanced mix of coal, gas, and renewables. While reliance on gas is significant, a duct-fired plant would allow for back up of further intermittent renewable resources in the long term
- Is among the best portfolios in terms of limiting negative economic impact from job loss and local tax base. UE professors concluded that the economic ripple effect of losing 82 FB Culley jobs equates to 189 additional job losses in the community. Total state and local tax impact would be approximately 7 million dollars annually
- Reduces dependence on coal-fired generation over time and provides flexibility to adapt to changes in technology
- Takes advantage of tax incentives for solar installation

UE = University of Evansville

Why Build Combined Cycle Gas Generation?

- Vectren is unique, as our fleet is primarily coal generation - designed as a 24/7 power source. Vectren does not currently have a significant amount of gas generation
  - Coal units respond too slowly to effectively back up large amounts of intermittent renewable energy
- Gas generation positions Vectren for more renewables in the future
  - Solar and wind resources can experience rapid up and down fluctuations in output. Quick response is needed by other generation in order to maintain frequency and voltage support
  - Gas Fired Combined Cycle units provide a rapid response suitable for backing up significant amounts of renewable generation with the obvious benefits of being more efficient with very low emissions
  - The Duct-Firing option of a combined cycle unit provides quick response peaking capacity with a higher level of efficiency compared to simple cycle gas turbine peaking units
- Gas generation with Duct-Firing was selected in each of the modeled scenarios, including the high technology case with steep drops in renewables/storage cost, and possible future states with high gas prices
- Vectren modeled a new CCGT plant, built at a brown field site, which reuses some equipment. Should this site ultimately be chosen, Vectren will pipe gas to the location
  - Vectren does not earn a return on the gas commodity
  - A return on gas pipeline investments are subject to review and approval by the IURC

IURC = Indiana Utility Regulatory Commission

CCGT = Combined Cycle Gas Turbine

Duct-Firing

Depending on set up, Duct-firing can provide approximately 200 MWs (Installed Capacity) of efficient peaking capacity capability through gas burners located within the heat recovery steam generator. These burners can be fired to generate more power during times of high demand

Generic Technology Assumptions	Duct-Firing CCGT
Capital Costs (2015$/kW)	$300
Fixed O&M (2015$/kW-year)	Very minimal incremental costs
MISO (UCAP[1]) Accreditation	96%

- Duct-firing has significantly cheaper capital costs on a $/kW of UCAP accreditation than comparable simple cycle/peaker costs (~1/2 cost)
- Duct-firing capacity can provide peaking energy at a lower heat rate than many simple cycle technologies
- Decision for duct-firing needs to be incorporated in initial design decision

[1] UCAP = Unforced Capacity (the amount of capacity that can be depended on at time of peak)

CCGT = Combined Cycle Gas Turbine kW = Kilowatt
O&M = Operations and Maintenance
MISO = Midcontinent Independent System Operator
MW = Megawatt

Renewables

- Vectren will build solar in the next several years to gain proficiencies with this resource
  - Vectren pulled solar generation forward in the preferred plan vs. when the model would suggest
    - Several small projects, followed by 50 MW of solar in 2019, which is partially dependent on current tax incentives remaining in place
- 2027 and beyond, solar tended to be selected more often than wind because it better met Vectren's capacity needs
  - 11% of rated wind capacity credited towards MISO planning reserve margin requirement
  - 38% assumed for solar

MW = Megawatt
MISO = Midcontinent Independent System Operator

Renewables (Continued) - Solar and Energy Storage

Several solar projects in the near term under consideration, totaling 4-6 MW

- Utility owned solar projects
  - Utility owned and operated 2 MW universal utility solar power plant with a 1 MWh battery storage system (pictured above)
  - Discussions with the city of Evansville on joint projects to be finalized in the first quarter 2017
  - Other potential project discussions on-going

- Urban Living Center – Vectren/Haier partnership in the Regional Cities project
  - Rooftop universal solar power plant with smart inverter
  - Residential/commercial energy storage with smart inverters
  - Building & Home Automation/Smart Appliances for Energy Management and Demand Response

Urban Living Research Center

MW = Megawatt MWh = Megawatt Hour

MISO Capacity Market Uncertainty

- MISO (Midcontinent Independent System Operator) is Vectren's Regional Transmission Operator (RTO). Vectren is required to maintain a 7.6% planning reserve margin[1] requirement through supply and demand side resources. This requirement can vary up or down each year
- MISO is projecting a shortfall for high certainty resources beginning in 2018 and grows through 2021

OMS-MISO Resource Adequacy Survey Results	Zone 6 Resource Adequacy Shortfall, Earliest Projection	MISO-wide Resource Adequacy Shortfall, Earliest Projection
2016	300 MW shortfall in 2019/20	400 MW shortfall in 2018

- Projected capacity shortfalls help drive volatility

Planning Year	Clearing Price for Zone 6 (Indiana & Kentucky)	Year-over-Year Price Change
2013-2014	$1.05	-
2014-2015	$16.75	~1,500% Increase
2015-2016	$3.48	~80% Decrease
2016-2017	$72.00	~2,000% Increase

[1] Accreditation towards the planning reserve margin is based on what MISO can expect a resource to generate during the peak season

MISO = Midcontinent Independent System Operator
MW = Megawatt
OMS = Organization of MISO States

Impact of Recent Election

- Potential for industry change over the next several years
  - EPA's Clean Power Plan at risk
  - Clean-Energy Tax incentives at risk
  - Paris agreement could be canceled
- Vectren is confident in the need for new gas generation by 2024
  - A duct-fired gas combined cycle unit was selected in all scenarios (possible future states), including the low regulatory scenario
  - Gas prices are low and stable
  - Age of Brown scrubber technology
  - New administrations will most likely push for a lower carbon future
  - Long lead time to file, gain approval, and build new gas combined cycle
  - Uncertainty regarding availability and cost of future capacity and energy
  - If necessary, can serve as back up for further cost effective renewables
- Other aspects of the plan are less certain
  - For example, Warrick 4 exit modeled in 2020; however, date could change
    - Plant jointly owned with Alcoa – Alcoa in midst of transition. We continue to discuss the future of Warrick 4 with Alcoa

EPA = Environmental Protection Agency

Next Steps

While this is the IRP preferred portfolio that will likely be filed in mid December, it is not a final generation transition plan. Vectren will use the coming months to develop an actual generation transition case, complete with timelines and spend that will be filed with the IURC for approval and execution in the future.

- File the IRP on December 16th
- File 2018-2020 Energy Efficiency
  - Guided by the Preferred Portfolio
- File for Solar Generation (4-6 MW)
- File for Generation Transition

MW = Megawatt IURC = Indiana Utility Regulatory Commission
IRP = Integrated Resource Plan

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Existing EPA Regulations

Angila Retherford – Vectren Vice President of Environmental Affairs and Corporate Sustainability

EPA = Environmental Protection Agency

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Post-election Regulations Update

- While much emphasis has been placed on potential impacts to the Clean Power Plan rulemaking under the new Trump administration, the Effluent Limitation Guidelines rule, or ELGs, in combination with the Coal Combustion Residuals rule, is the primary driver of near term environmental compliance expenditures modeled in the IRP
- By way of review, the US EPA finalized its new ELGs for power plant wastewaters in September of 2015.
  - Sets stringent wastewater discharge limits for selenium, arsenic and mercury
  - Prohibits any discharge of water used to handle fly ash and bottom ash, thereby mandating dry handling of ash

EPA = Environmental Protection Agency
ELG = Effluent Limitation Guidelines
US = United States
IRP = Integrated Resource Plan

Post-election Regulations Update

- President-elect Trump has indicated that he intends to review environmental regulations
- At this point, it is unclear which regulations President-elect Trump's new EPA administrator intends to review, other than the Clean Power Plan and the Waters of the US rule
- Final regulations, like the ELG and CCR rules, require notice and comment rulemaking to rescind and/or modify
  - An 18 to 24 month process
  - Rules such as the ELG rule which are technology mandates arising under legislation, in this case the Clean Water Act, are more difficult to set aside and must be supported by a technological or human health rationale

EPA = Environmental Protection Agency
ELG = Effluent Limitation Guidelines
CCR = Coal Combustion Residuals
US = United States

Post-election - Clean Power Plan

- With respect to the issue of carbon regulations, there are some things that the President-elect can do that will be easier than others
- US participation in the Paris Agreement, whose carbon reduction goals Vectren already met in 2015, is a non-binding commitment in the nature of an executive order, so it can be set aside immediately. Although, the diplomatic consequences may be more challenging for the new administration
- The CPP is a final regulation, so it must be rescinded/modified through a supplemental notice and comment rulemaking
  - Currently in litigation, and even if the Trump Department of Justice determines that it will no longer defend the rule, the rule is still being defended by other states and environmental groups
- Previous Endangerment Finding would also need to be rescinded and/or modified
- While it remains to be seen what measures, if any, the Trump administration will be successful in delaying or rescinding, Vectren's generation planning decisions are long term in nature, and the low regulatory scenario that we modeled assumed that there was no CPP in place during the planning period

CPP = Clean Power Plan

Optimization Modeling Results and Portfolio Development

Matt Lind – Burns and McDonnell Associate Project Manager

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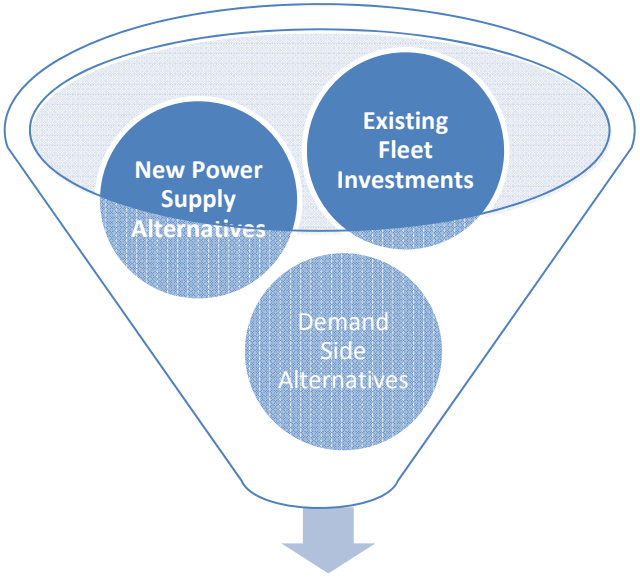
Resource Modeling – Computer Generated Portfolios

- **IRP Purpose**: To select a portfolio to best meet customers' needs for reliable, low cost, environmentally acceptable power over a wide range of future market and regulatory conditions

- Objectives:
  - Minimize power cost
  - Maintain sufficient capacity to satisfy MISO's planning reserve margin requirement
- Inputs:
  - Existing fleet
  - New supply-side alternatives
  - Demand-side alternatives



Portfolio Development

MISO = Midcontinent Independent System Operator
IRP = Integrated Resource Plan

Filtered/Modeled Alternatives*

Existing Fleet

- Continue on Coal
- Convert to Natural Gas
- Repower CCGT
- Retire

New Supply-Side

- 890 MW CCGT
- 690 MW CCGT
- 440 MW CCGT
- 340 MW CCGT
- 220 MW GT
- 100 MW GT
- 50 MW Wind (IN)
- 100 MW Wind (IN)
- 15 MW CHP
- 9 MW Solar PV
- 50 MW Solar PV

Demand-Side

- Energy Efficiency
- Demand Response

*Multiple blocks of each resource were available for selection. For example, some model runs chose 4 - 100 MW blocks of wind

GT = Gas Turbine
CCGT = Combined Cycle Gas Turbine
PV = Photovoltaic
IN = Indiana
MW = Megawatt
CHP = Combined Heat and Power

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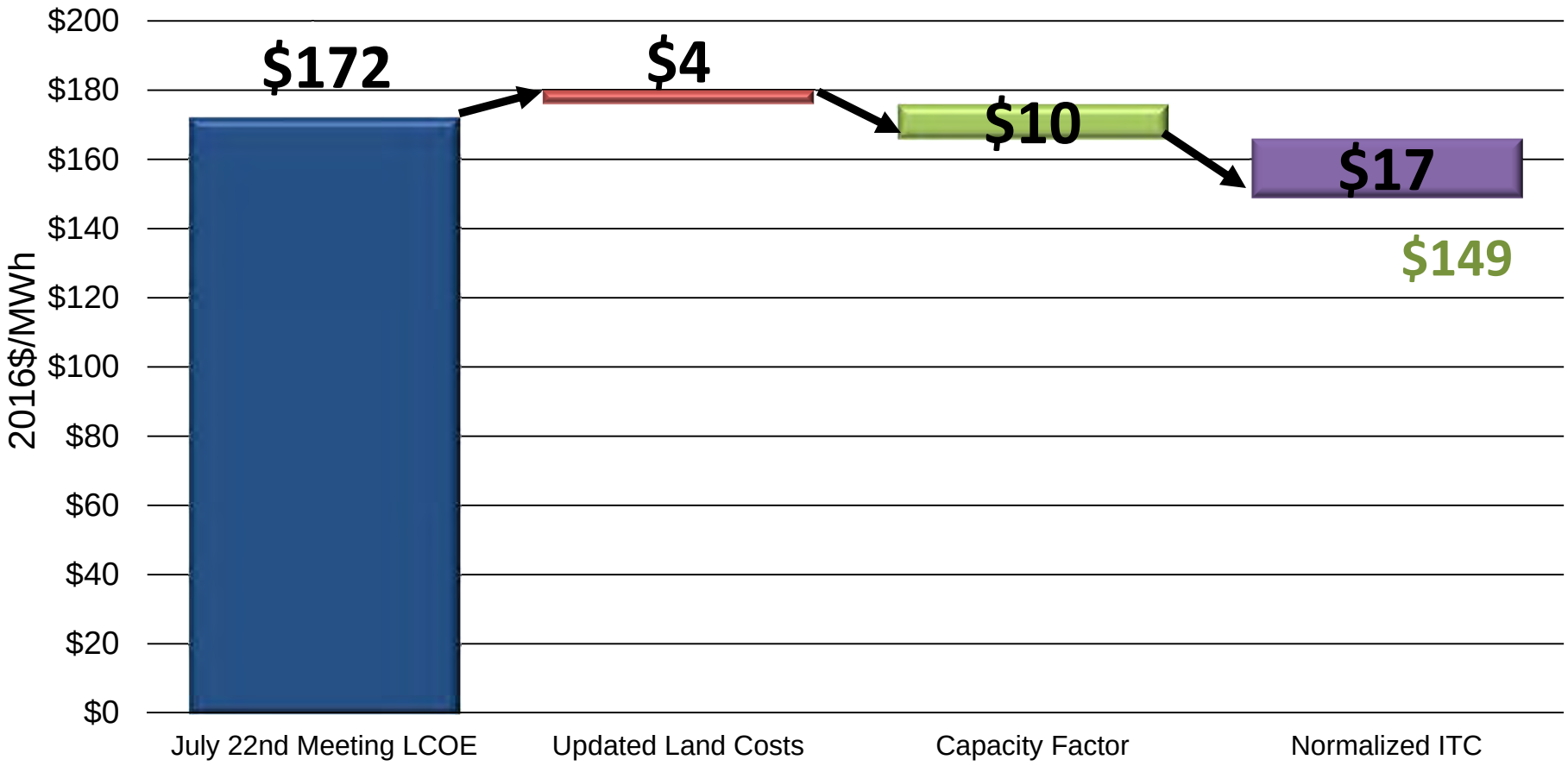
Update to 50 MW Solar Cost Prior to Optimization



LCOE = Levelized Cost of Energy
ITC = Investment Tax Credit
MWh = Megawatt Hour
MW = Megawatt

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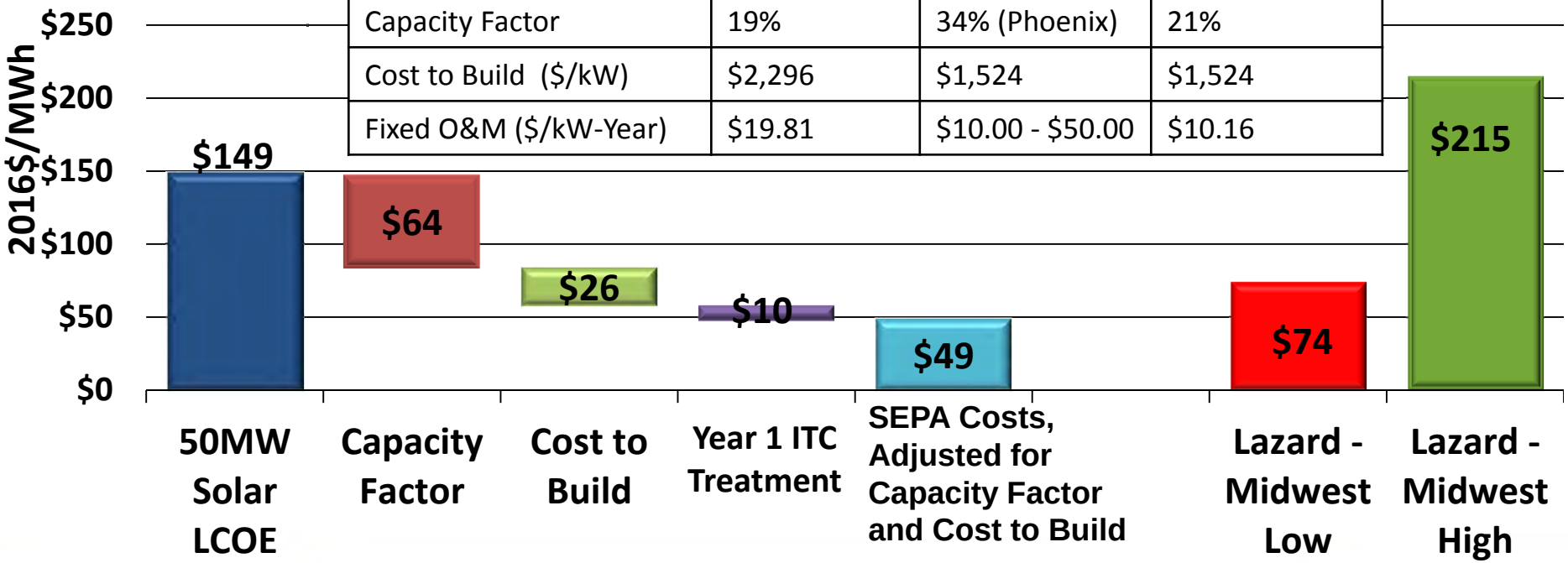
LCOE Comparison to Other Public Sources

- Upon review of several LCOE studies, we are confident that Vectren IRP solar costs are reasonable
- The cost to build a solar facility in Indiana assumed within the IRP reflects the total cost to build for a project including PV modules, inverter, civil work, engineering contractor fees & contingency, owner's cost, owner's contingency, land, transmission interconnection, and AFUDC. Many numbers quoted in the public arena often exclude one or more of these components due to site specific and owner specific conditions

Variable (2016$)	Vectren IRP	SEPA	Lazard Midwest
Capacity Factor	19%	34% (Phoenix)	21%
Cost to Build ($/kW)	$2,296	$1,524	$1,524
Fixed O&M ($/kW-Year)	$19.81	$10.00 - $50.00	$10.16



SEPA = Solar Electric Power Association MWh = Megawatt Hour
LCOE = Levelized Cost of Energy kW = Kilowatt ITC = Investment Tax Credit
IRP = Integrated Resource Plan O&M = Operations & Maintenance
AFUDC = Allowance for Funds Used During Construction PV = Photovoltaic

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Portfolio Development

- Created 15 resource portfolios for the risk analysis (Listed as A-O on the following pages)
  - Vectren included a portfolio very similar to the current mix of resources (A)
  - 7 computer-generated portfolios, one for each pre-determined future (B-H)
  - Used judgment to consider other possibilities in creating portfolios with a balanced mix of resources
    - Worked with stakeholders to develop 2 balanced portfolios (I-J)
    - Worked with expert consultants to develop 5 additional balanced portfolios (K-O)
  - Note that all portfolios assume Vectren ends joint operations of Warrick 4 in 2020. Additionally, the Northeast peaking units and Broadway Avenue 2 retire due to age

Business As Usual - Existing Portfolio*

Time Period	Business As Usual – Existing Portfolio (A)	
	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 1.0% EE (2017) • 12MW DR • 4 MW Solar
Middle 2023-2029	• BAGS 2	• 8MW DR • 220MW SCGT
Late 2030-2036		

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2
FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

MW = Megawatt EE = Energy Efficiency DR = Demand Response
SCGT = Simple Cycle Gas Turbine

Computer-Generated Portfolios

- Developed portfolios for seven (7) different scenarios (possible future states)
  - Base Case
  - Base Large Load Addition (100 MW in 2024)
  - High Regulation
  - Low Regulation
  - High Economy
  - Low Economy
  - High Technology
- Model retired coal and selected a highly efficient combined cycle natural gas plant (all fully duct-fired) in all scenarios, with varying levels of energy efficiency, demand response, and renewables
  - No renewables are selected prior to 2027 (4 MW solar added to all portfolios in 2018 prior to optimization)
  - Energy Efficiency was selected at varying levels
    - None in Base, Low Economy, or High Technology
    - 1% in Low Regulation, High Regulation, and Base Large Load Addition
    - 2% in High Economy

MW = Megawatt

Computer-Generated Portfolios by Scenario

Time Period	Base Scenario, Portfolio B – Heavy Gas		Base + Load Growth Scenario, Portfolio C – Gas & Solar		High Technology Scenario, Portfolio H – Heavy Gas	
	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 4MW Solar	• NE 1-2 • W4 Exit	• 1.0% EE • 4MW Solar • 12MW DR	• NE 1-2 • W4 Exit	• 4MW Solar
Middle 2023-2029	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 889MW Fired-CCGT • 220MW SCGT	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 889MW Fired-CCGT • 220MW SCGT • 8MW DR	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 889MW Fired-CCGT • 220MW SCGT
Late 2030-2036		• 36MW Solar		• 68MW Solar		• 1MW Battery • 9MW Solar

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2

FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

MW = Megawatt EE = Energy Efficiency DR = Demand Response

SCGT = Simple Cycle Gas Turbine CCGT = Combined Cycle Gas Turbine

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Computer-Generated Portfolios by Scenario

Time Period	High Regulatory Scenario, Portfolio D – Gas & Wind		Low Regulatory Scenario, Portfolio E – Heavy Gas		High Economy Scenario, Portfolio F – Gas & Wind		Low Economy Scenario, Portfolio G – Gas & Solar	
	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 1.0% EE • 4MW Solar	• NE 1-2 • W4 Exit	• 1.0% EE • 4MW Solar • 12MW DR • 220MW SCGT	• NE 1-2 • W4 Exit	• 2.0% EE • 4MW Solar • 8MW DR	• NE 1-2 • W4 Exit	• 4MW Solar
Middle 2023-2029	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 889MW Fired-CCGT	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 8MW DR • 889MW Fired-CCGT • 220MW SCGT	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 12MW DR • 889MW Fired-CCGT • 220MW SCGT • 9MW Solar	• ABB 1 • ABB 2 • BAGS 2 • FBC 2 • FBC 3	• 20MW DR • 889MW Fired-CCGT
Late 2030-2036		• 400MW Wind				• 400MW Wind		• 59MW Solar

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2
FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

MW = Megawatt EE = Energy Efficiency DR = Demand Response
SCGT = Simple Cycle Gas Turbine CCGT = Combined Cycle Gas Turbine

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Balanced Portfolios - Stakeholder

- Held a portfolios development workshop on July 22, 2016 to gain input from stakeholders
  - Per input, developed 2 balanced portfolios – One keeps some coal beyond 2023 and one closes all coal by 2024
    - Maximum Energy Efficiency 2% per year
    - Maximum Combined Heat and Power (30 MW)
    - Increased utilization of renewables, particularly solar
    - Includes storage

MW = Megawatt

Stakeholder Portfolios

Time Period	Portfolio I – Stakeholder w/ Renewables		Portfolio J – Stakeholder w/Renewables (Cease Coal 2024)	
	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 2.0% EE (2018-2036) • 4MW Solar • 12MW DR	• NE 1-2 • W4 Exit	• 2.0% EE (2018-2036) • 4MW Solar • 12MW DR
Middle 2023-2029	• ABB 1 • ABB 2 • BAGS 2	• 221MW CCGT Partial Ownership (50%) • 8MW DR • 30MW CHP • 500MW Solar • 800MW Wind	• ABB 1 • ABB 2 • FBC2 • FBC 3 • BAGS 2	• 331MW CCGT Partial Ownership (75%) • 8MW DR • 30MW CHP • 800MW Solar • 1,200MW Wind • 100MW/400MWh Battery
Late 2030-2036	• FBC 2 • FBC 3	• 100MW/400MWh Battery • 200MW Wind • 400MW Solar • 110MW CCGT Partial Ownership (25%)		• 100MW/400MWh Battery

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2
FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

MW = Megawatt EE = Energy Efficiency DR = Demand Response
CCGT = Combined Cycle Gas Turbine MWh = Megawatt Hour
CHP = Combined Heat and Power

Balanced Portfolios - Vectren

- Worked with expert consultants to develop 5 additional balanced portfolios to evaluate the performance of a balanced mix of energy resources to mitigate risk
  - 3 continue to operate FB Culley 3 beyond 2023
    - Retire all other coal units and build a combined cycle gas unit (2 with a fully fired unit and 1 with an unfired unit)
    - FB Culley 3 is Vectren's most efficient coal unit
      - Controlled for SO_2, NO_X, Mercury, Particulate Matter, SO_3
    - Determined energy efficiency & varying levels of early renewables
  - 2 close all coal by 2024
    - Build a combined cycle gas unit (1 with fired unit and 1 unfired)
    - Build early solar (54 MW)
    - Optimize with energy efficiency, demand response, and renewables

MW = Megawatt
SO_2 = Sulfur Dioxide
NO_X = Nitrogen Oxide
SO_3 = Sulfur Trioxide

Other Portfolios – Keep One Coal Unit Beyond 2024 (FBC 3)

Time Period	Portfolio K – Diversified w/Coal		Portfolio L – Diversified w/Coal		Portfolio M – Diversified w/Coal	
	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 1.0% EE (2018-2020) • 0.75% EE (2021-2022) • 4MW Solar	• NE 1-2 • W4 Exit	• 1.0% EE (2018-2020) • 0.75% EE (2021-2022) • 4MW Solar • 50MW Solar	• NE 1-2 • W4 Exit	• 1.0% EE (2018-2020) • 0.75% EE (2021-2022) • 4MW Solar • 50MW Solar
Middle 2023-2029	• ABB 1 • ABB 2 • FBC 2 • BAGS 2	• 0.75% EE (2022-2026) • 0.50% EE (2027-2029) • 889MW Fired-CCGT • 4MW DR • 9MW Solar • 50MW Wind	• ABB 1 • ABB 2 • FBC 2 • BAGS 2	• 0.75% EE (2023-2026) • 0.50% EE (2027-2029) • 889MW Fired-CCGT	• ABB 1 • ABB 2 • FBC 2 • BAGS 2	• 0.75% EE (2023-2026) • 0.50% EE (2027-2029) • 700MW CCGT
Late 2030-2036		• 0.50% EE (2030-2036)		• 0.50% EE (2030-2036)		• 0.50% EE (2030-2036) • 118MW Solar

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2
FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

MW = Megawatt EE = Energy Efficiency DR = Demand Response
CCGT = Combined Cycle Gas Turbine

Other Portfolios – Shutdown All Coal in 2024 & Replace with EE, DR, and Renewables

Time Period	Diversified Portfolio (N)		Diversified Portfolio (O)	
	Retirement/ Exit Joint Operations	Additions	Retirement/ Exit Joint Operations	Additions
Early 2017-2022	• NE 1-2 • W4 Exit	• 1.0% EE (2018-2036) • 54MW Solar • 12MW DR	• NE 1-2 • W4 Exit	• 1.0% EE (2018-2036) • 54MW Solar • 12MW DR
Middle 2023-2029	• ABB 1 • ABB 2 • FBC 2 • FBC 3 • BAGS 2	• 8MW DR • 700MW CCGT • 220MW SCGT • 118MW Solar	• ABB 1 • ABB 2 • FBC 2 • FBC 3 • BAGS 2	• 8MW DR • 889MW Fired-CCGT • 168MW Solar
Late 2030-2036		• 100MW Solar		• 109MW Solar

Unit Abbreviations:

NE – Northeast W4 – Warrick 4 ABB 1 – AB Brown 1 ABB 2 – AB Brown 2
FBC 2 – FB Culley 2 FBC 3 – FB Culley 3 BAGS 2 – Broadway Avenue Gas Turbine 2

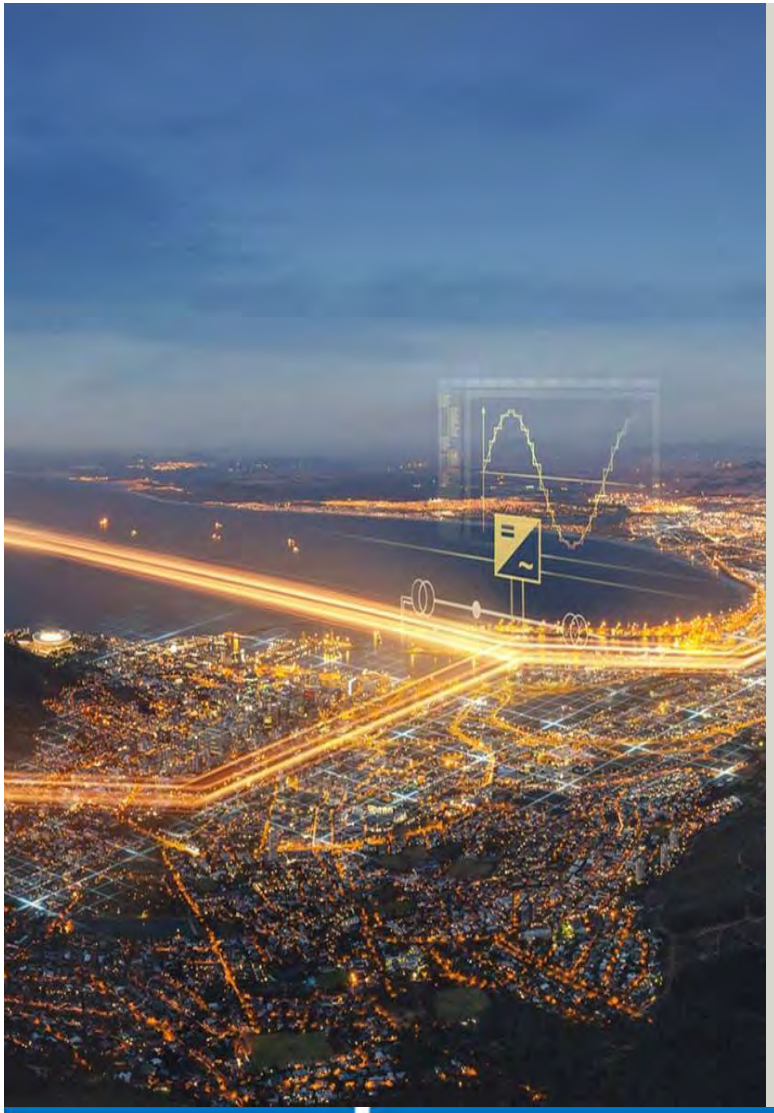
MW = Megawatt EE = Energy Efficiency DR = Demand Response
SCGT = Simple Cycle Gas Turbine CCGT = Combined Cycle Gas Turbine

Risk Analysis

Gary Vicinus – Managing Director of Consulting Practice

VECTREN
Energy Delivery

Risk Analysis



A risk analysis was performed on 15 portfolios

- Approximately 200 iterations were developed from stochastic distributions of load, gas prices, coal prices, environmental costs, and technology capital costs to test each portfolio over a range of conditions
- Vectren selected six objectives and several metrics to assess portfolios

Objective (metrics)

- Rate Metric (20 year NPV RR)
- Risks (Standard Deviation of NPV, Average Unaccounted Capacity Purchase Needs, Market Purchase Risk, Remote Generation Risk)
- Cost Risk-Tradeoff (combined Expected NPV RR and Standard Deviation Risks)
- Balanced Energy/Flexibility (Concentration Metric, # distinct baseload sources, Generation Mix Balance, Market Flexibility)
- Environmental (Carbon reduction, SO_2/NO_X reduction)
- Local Economic Impact

NPV RR = Net Present Value Revenue Requirement SO_2 = Sulfur Dioxide
NO_X = Nitrogen Oxide

VECTREN Energy Delivery

Base Case* Portfolio Construction

Portfolio	CT Additions		CC Additions		Wind Additions		CHP Additions	Solar Additions			Battery Additions		Capacity Market Purchase			Coal Retirements			Gas Retirements		DR			EE		
	Total MW		Total MW		Total MW		Total MW	Total MW			Total MW		Annual Average MW			Total MW **			Total MW		Total MW			Total MW		
	Early	*Middle*	*Middle*	*Late*	*Middle*	*Late*	*Middle*	*Early*	*Middle*	*Late*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Early*	*Middle*	*Late*	*Early*	*Middle*	*Late*
A: Existing Portfolio		220						4					46	9	2	162			22	81	12	8	13			
B: Heavy Gas		220	889					4		36			51	11	4	162	899		22	81						
C: Gas & Solar		220	889					4		68			30	3	5	162	899		22	81	12	8		16	17	-2
D: Gas & Wind			889			400		4					34	77	87	162	899		22	81				16	17	-2
E: Heavy Gas	220	220	889					4					20	0	0	162	899		22	81	12	8		16	17	-2
F: Gas & Wind	220		889			400		4					6	0	0	162	899		22	81	12	8		32	34	-5
G: Gas & Solar			889					4		59			51	121	176	162	899		22	81		20				
H: Heavy Gas		220	889					4		9			42	13	4	162	899		22	81						
I: Stakeholder w/ Renewables			221	110	800	200	30	4	500	400		100	14	0	0	162	530	369	22	81	12	8		32	34	-5
J: Stakeholder w/ Renewables			331		1200		30	4	800		100	100	14	0	0	162	899		22	81	12	8		32	34	-5
K: Diversified w/ Coal			889		50			4	9				22	5	0	162	634		22	81				15	9	-8
L: Diversified w/ Coal			889					54					22	3	0	162	634		22	81				15	9	-8
M: Diversified w/ Coal		220	700					54		68			18	1	5	162	634		22	81	12	8		15	9	-8
N: Gas & Solar		220	700					54	118	100			17	4	3	162	899		22	81	12	8		16	17	-2
O: Gas & Solar			889					54	168	109			7	3	5	162	899		22	81	12	8		16	17	-2

Business As Usual (Existing Portfolio)

Computer Generated (Scenarios)

Balanced Portfolios - Stakeholder

Balanced Portfolios - Vectren

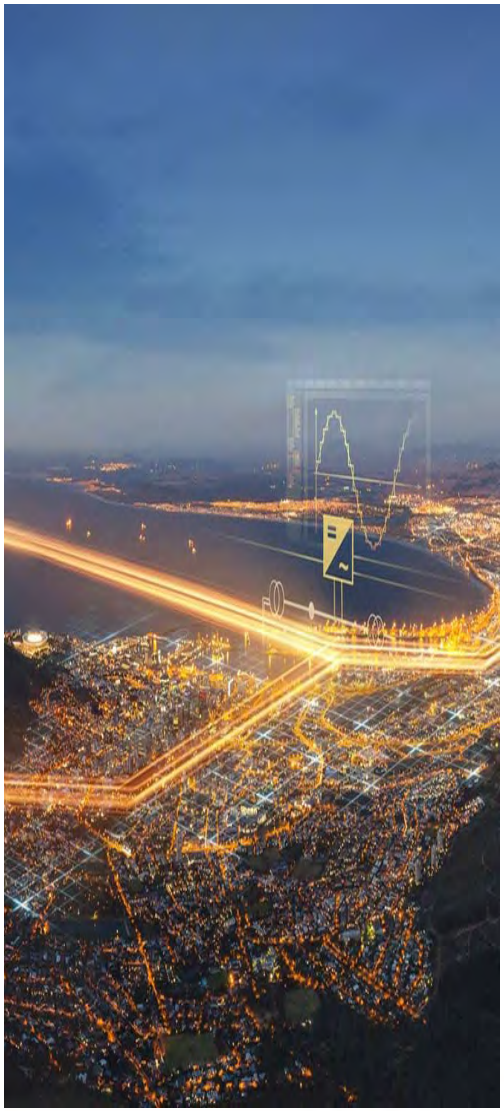
Early: 2017-2022
Middle: 2023-2029
Late: 2030-2036

* Modeling values reflect Base Case
** Includes exiting joint operations of Warrick 4

CT = Combustion Turbine
DR = Demand Response
CC = Combined Cycle
CHP = Combined Heat and Power
EE = Energy Efficiency
MW = Megawatt

VECTREN Energy Delivery

Executive Summary



Portfolio L is Vectren's recommended Portfolio

Is among the best performing portfolios across multiple measures on the balanced scorecard

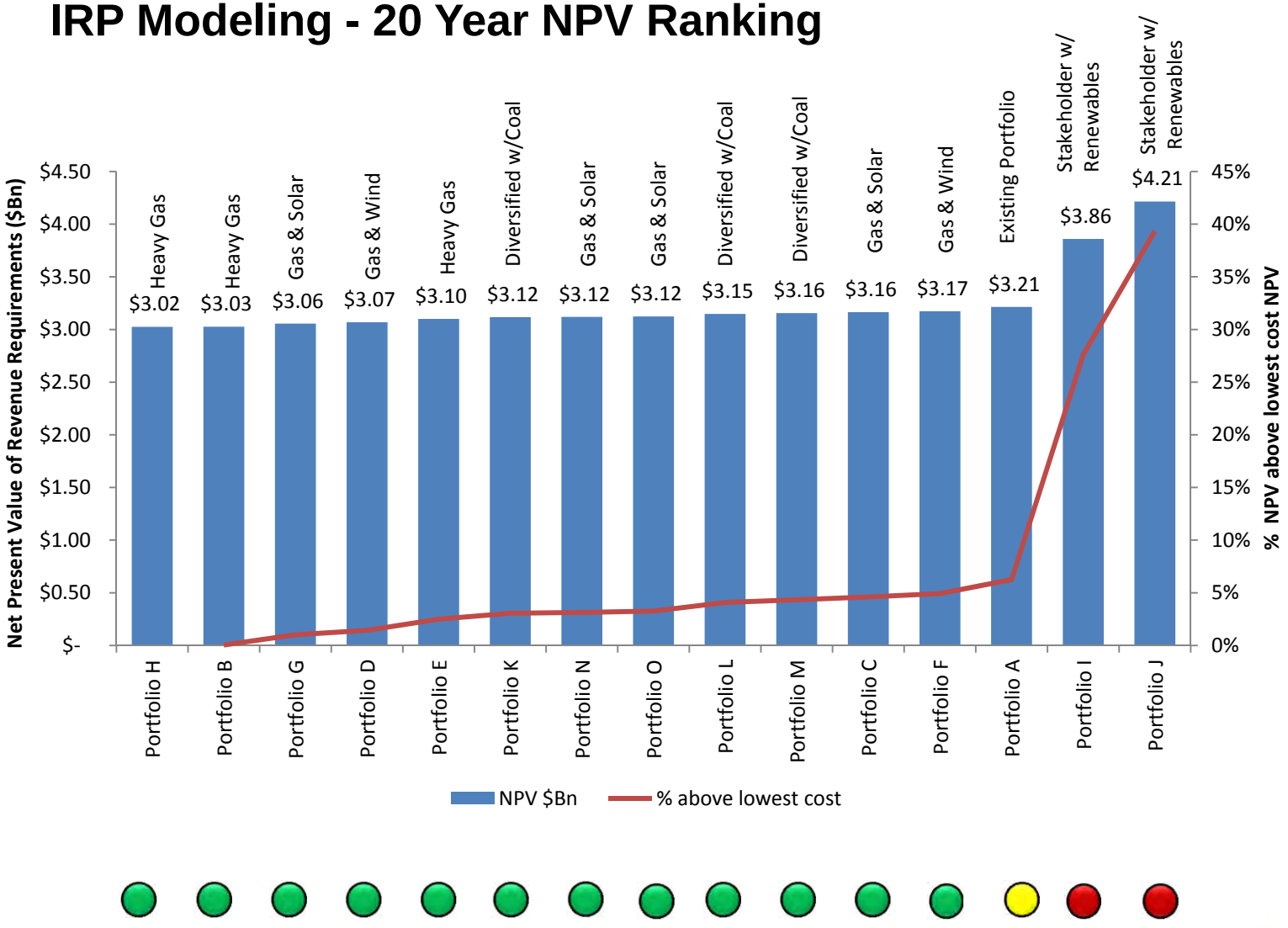
- Is among the lower cost portfolios (within 4 percent of the lowest cost portfolio)
- Leads to a lower carbon future with almost 50% reduction in CO_2 from 2012 levels
- Brings renewables into the portfolio early vs. model selection
- Provides low-cost peaking generation to back up renewable resources in the long term and provides economic development opportunity
- Provides a more balanced mix of coal, gas, and renewables
- Limits negative economic impact from job loss and local tax base
- Provides flexibility to adapt to changes in technology
- Takes advantage of tax incentives for solar installation

CO_2 = Carbon Dioxide

VECTREN Energy Delivery

Rate Metric Summary

IRP Modeling - 20 Year NPV Ranking



20 Year Portfolio Ranking Relative to Portfolio H

- Portfolios within 5%
- Portfolios between 5% and 10%
- Portfolio above 10%

NPV = Net Present Value Bn = Billions

IRP = Integrated Resource Plan

VECTREN Energy Delivery

Rate Metric*: NPV Portfolio Cost Ranking

Portfolio	Aurora 20-Year Mean NPV $ Billion: 20 Year NPV	% above lowest cost	Summary
H: Heavy Gas	$ 3.02		
B: Heavy Gas	$ 3.03	0.0%	
G: Gas & Solar	$ 3.06	1.0%	
D: Gas & Wind	$ 3.07	1.4%	
E: Heavy Gas	$ 3.10	2.5%	
K: Diversified w/ Coal	$ 3.12	3.1%	
N: Gas & Solar	$ 3.12	3.1%	
O: Gas & Solar	$ 3.12	3.3%	
L: Diversified w/ Coal	$ 3.15	4.1%	
M: Diversified w/ Coal	$ 3.16	4.3%	
C: Gas & Solar	$ 3.16	4.6%	
F: Gas & Wind	$ 3.17	4.9%	
A: Existing Portfolio	$ 3.21	6.3%	
I: Stakeholder w/ Renewables	$ 3.86	27.6%	
J: Stakeholder w/ Renewables	$ 4.21	39.3%	

- Portfolio L is about 4% higher than the lowest cost portfolio (Portfolio H)
- The stakeholder Portfolios (I and J) exhibit substantially higher costs than all other portfolios (25-40% over 20 years)

20 Year Portfolio Ranking Relative to Portfolio H

- Portfolios within 5%
- Portfolios between 5% and 10%
- Portfolio above 10%

* The NPV of energy procurement is an indicative component of rates

NPV = Net Present Value

VECTREN Energy Delivery

Rate Metric Summary

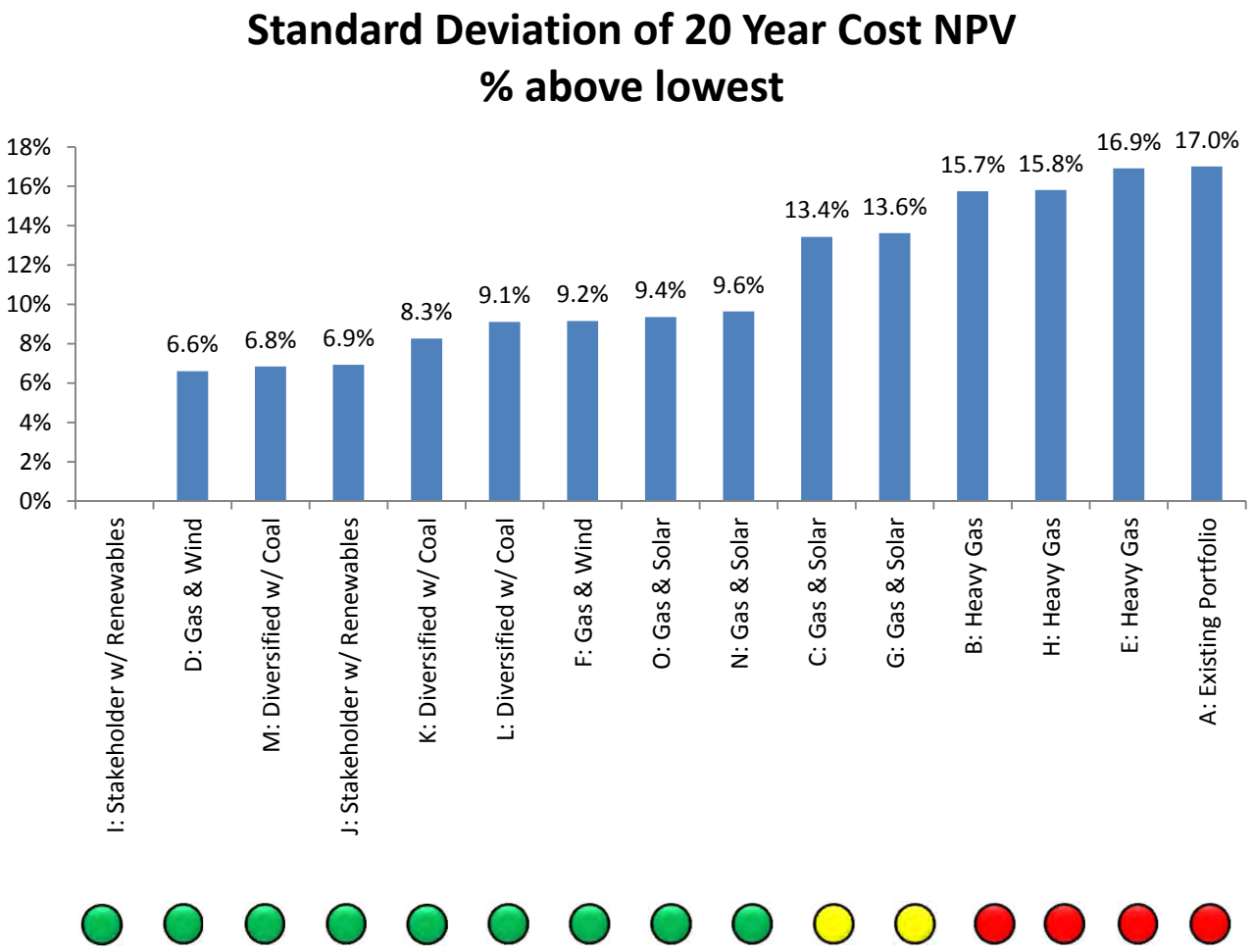
	Portfolio NPV
Portfolio L - Diversified w/ Coal	
Portfolio K – Diversified w/ Coal	
Portfolio M – Diversified w/ Coal	
Portfolio F – Gas & Wind	
Portfolio D – Gas & Wind	
Portfolio O – Gas & Solar	
Portfolio N – Gas & Solar	
Portfolio H – Heavy Gas	
Portfolio E – Heavy Gas	
Portfolio C – Gas & Solar	
Portfolio G – Gas & Solar	
Portfolio I – Stakeholder w/ Renewables	
Portfolio J – Stakeholder w/ Renewables	
Portfolio B – Heavy Gas	
Portfolio A – Existing Portfolio	

NPV = Net Present Value

VECTREN Energy Delivery

Risk Metric Summary

Variability (Standard Deviation) Measure of Risk Across 200 Iterations



- Portfolios I and J have low variability, but are high cost portfolios
- Portfolios M and D have the smallest risk amongst the balanced and computer-generated portfolios.
- Portfolio L remains in the lower tier of cost risk
- Portfolios A, B, E, and H have the high variability risk

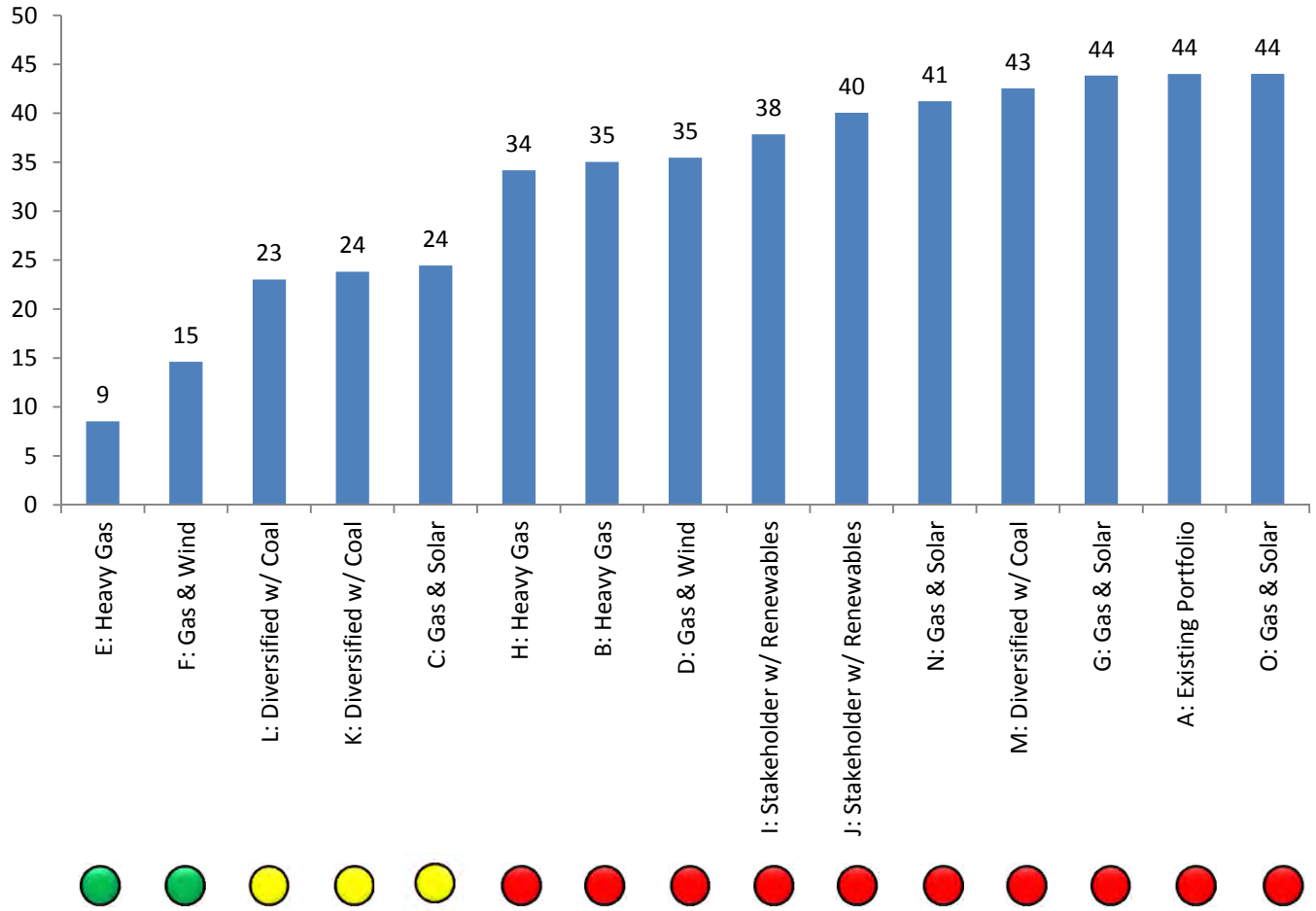
Standard Deviation Ranking

- Portfolios less than 10%
- Portfolios between 10% and 15%
- Portfolio above 15%

NPV = Net Present Value

VECTREN Energy Delivery

20 Year Average Incremental Capacity Purchases Across 200 Iterations (MW)*



- Uncertainty in load creates the possibility that portfolios meeting UCAP (Unforced Capacity) and PRM (Planning Reserve Margin) in the reference case may need to purchase additional capacity in the high load iterations
- This risk analysis calculates average incremental capacity purchase needs across 200 iterations
- Given the high volatility of capacity prices, this is an additional risk to portfolios with highest purchases
- Portfolio L is among the lower tier of incremental capacity purchases

Capacity Purchase Ranking

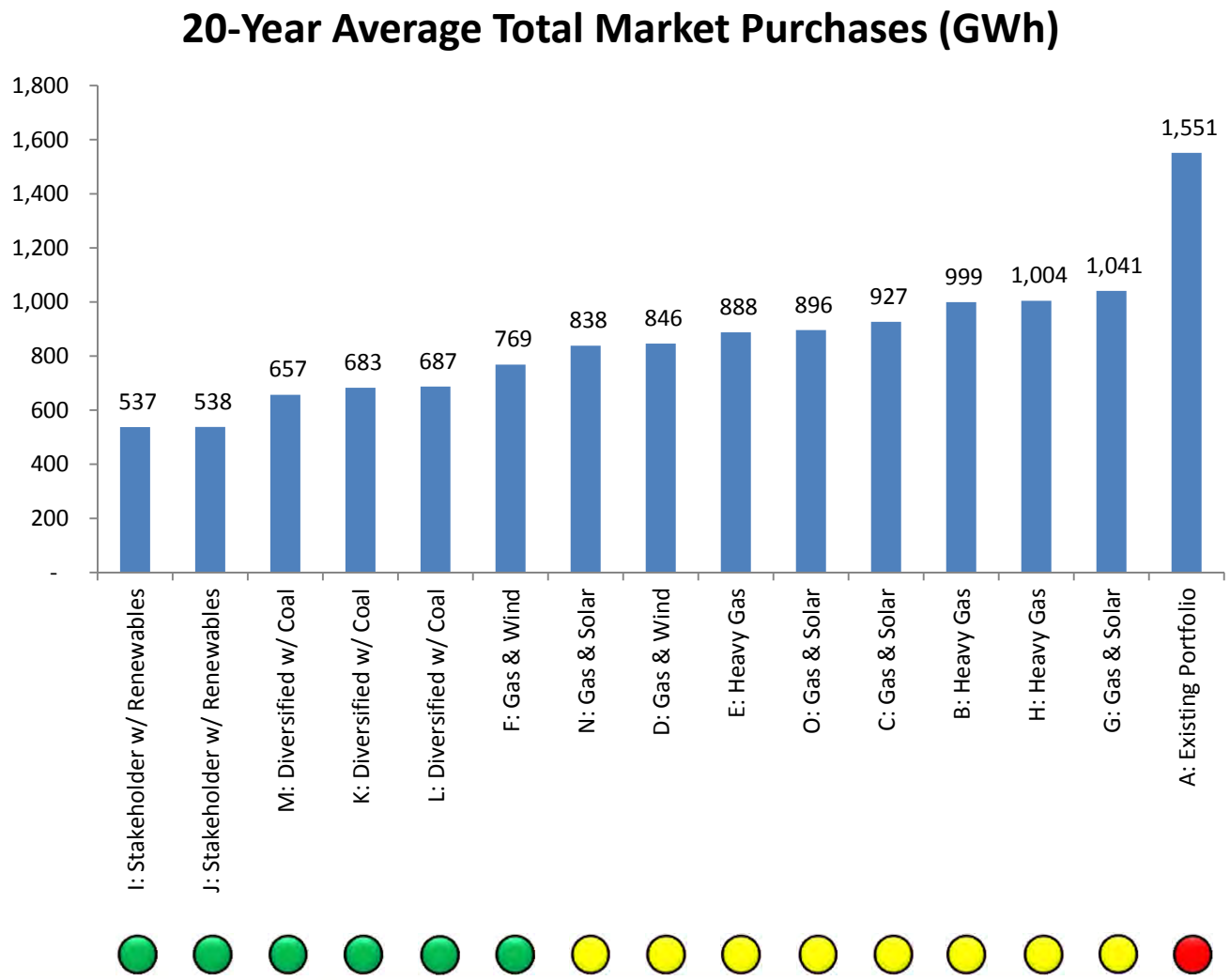
- Portfolios less than 20 MW
- Portfolios between 21 and 30 MW
- Portfolio above 31 MW

*Capacity purchases shown are incremental purchases beyond levels on page 40 (Base Case Portfolio Construction)

MW = Megawatt

VECTREN Energy Delivery

Exposure to Market Purchase Risk



- Large Market purchase requirements expose a portfolio to market price volatility, and therefore presents another risk
- The portfolios with the lowest exposure to market price volatility are Portfolios I, J, K, L, M, and F
- The portfolio with the highest exposure to market purchase risk is the Existing Portfolio A

Market Purchase Ranking

- Portfolios less than 800 GWh
- Portfolios between 800 and 1,200 GWh
- Portfolio above 1,200 GWh

GWh = Gigawatt Hour

VECTREN Energy Delivery

Risk Metric Summary

Portfolio	STD Dev. % above lowest	20 Year Average Capacity Purchases (MW)	20 Year Average Market Purchases (GWh)	Remote Generation Risk	Summary
L: Diversified w/ Coal	9.1%	23	687		
F: Gas & Wind	9.2%	15	769		
M: Diversified w/ Coal	6.8%	43	657		
K: Diversified w/ Coal	8.3%	24	683		
I: Stakeholder	0.0%	38	537		
J: Stakeholder	6.9%	40	538		
E: Heavy Gas	16.9%	9	888		
O: Gas & Solar	9.4%	44	896		
C: Gas & Solar	13.4%	24	927		
N: Gas & Solar	9.6%	41	838		
D: Gas & Wind	6.6%	35	846		
G: Gas & Solar	13.6%	44	1041		
H: Heavy Gas	15.8%	34	1004		
B: Heavy Gas	15.7%	35	999		
A: Existing Portfolio	17.0%	44	1551		

- Remote Generation Risk reflects the risk of transmission issues from remote sources to Vectren. This is principally related to wind.
- The only portfolios that do not have a red light on one or more of the risk metrics are portfolios L and C.

Standard Deviation Ranking
- Portfolios less than 10%
- Portfolios between 10% and 15%
- Portfolio above 15%

Capacity Purchase Ranking
- Portfolios less than 20 MW
- Portfolios between 21 and 30 MW
- Portfolio above 31 MW

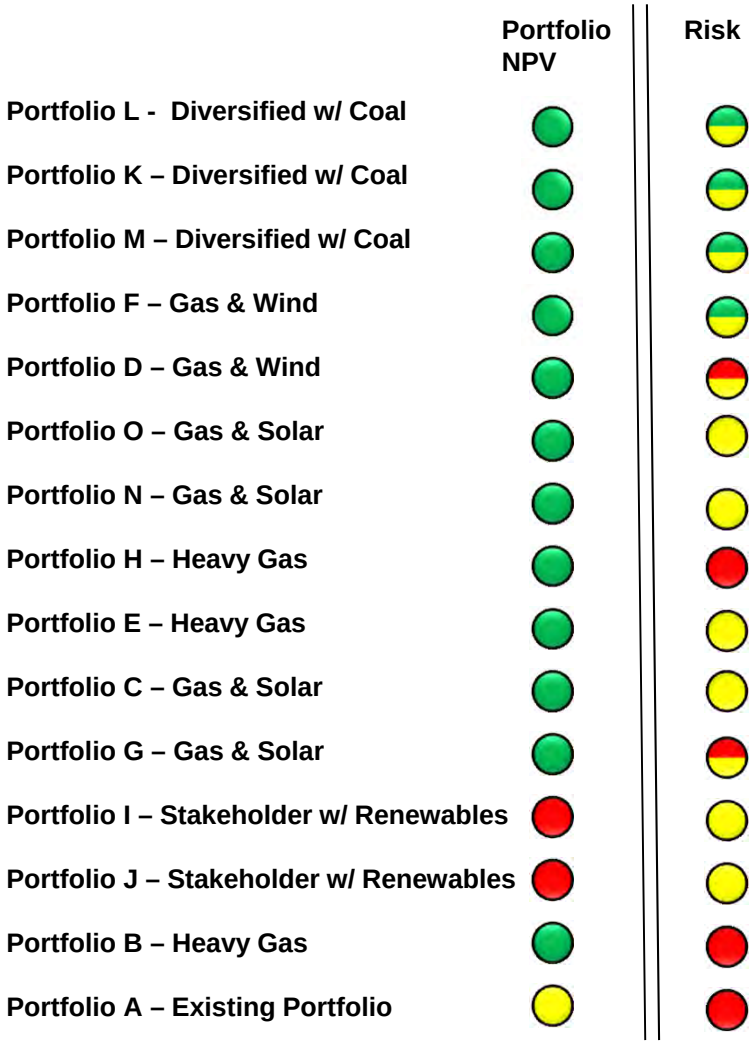
Market Purchase Ranking
- Portfolios less than 800 GWh
- Portfolios between 801 and 1,200 GWh
- Portfolio above 1,200 GWh

Remote Generation Risk
- Portfolios less than 50 MW of new remote generation
- Portfolios greater than 50 MW of new remote generation

GWh = Gigawatt Hour
MW = Megawatt
STD Dev. = Standard Deviation

VECTREN Energy Delivery

Risk Metric Summary

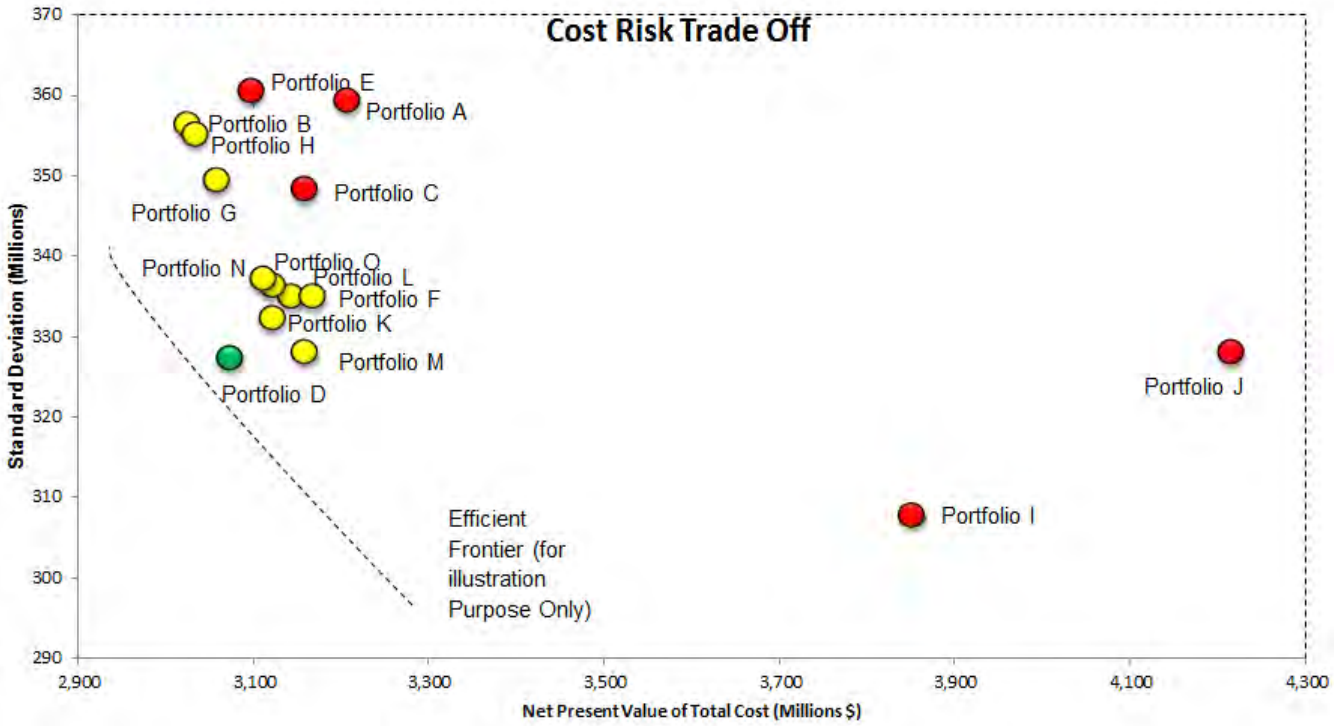


NPV = Net Present Value

VECTREN Energy Delivery

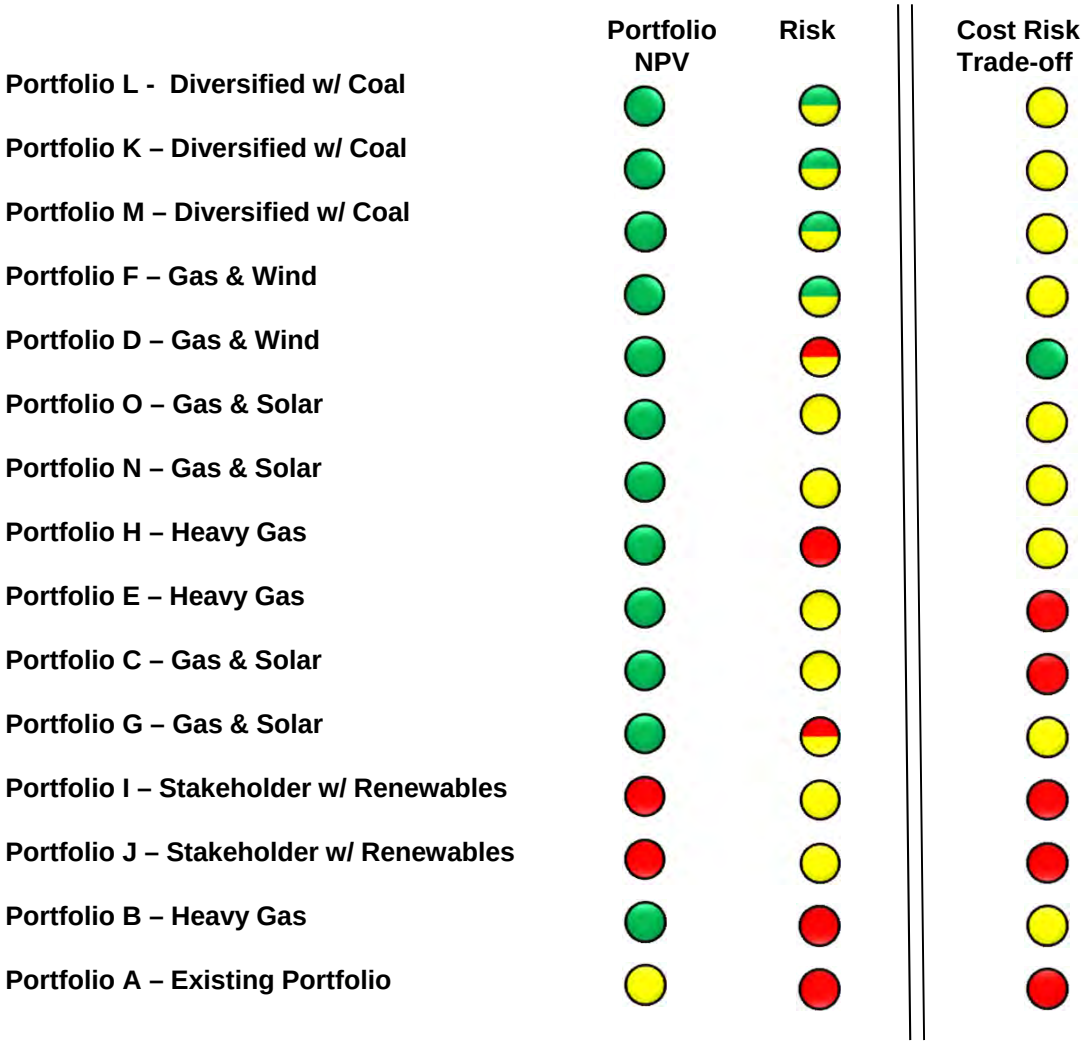
Cost-Risk Trade-Off Summary

Portfolio Standard Deviation Risk (vertical axis) vs. Expected Cost (horizontal axis) Tradeoff



- Portfolios I and J are very expensive for only a moderate reduction in risk
- Portfolios A, C, and E have poor expected cost-risk tradeoffs compared to other portfolios
- Portfolio D has the best Cost-Risk tradeoff, while Portfolio L is among the best portfolios

Cost Risk Trade-off Summary

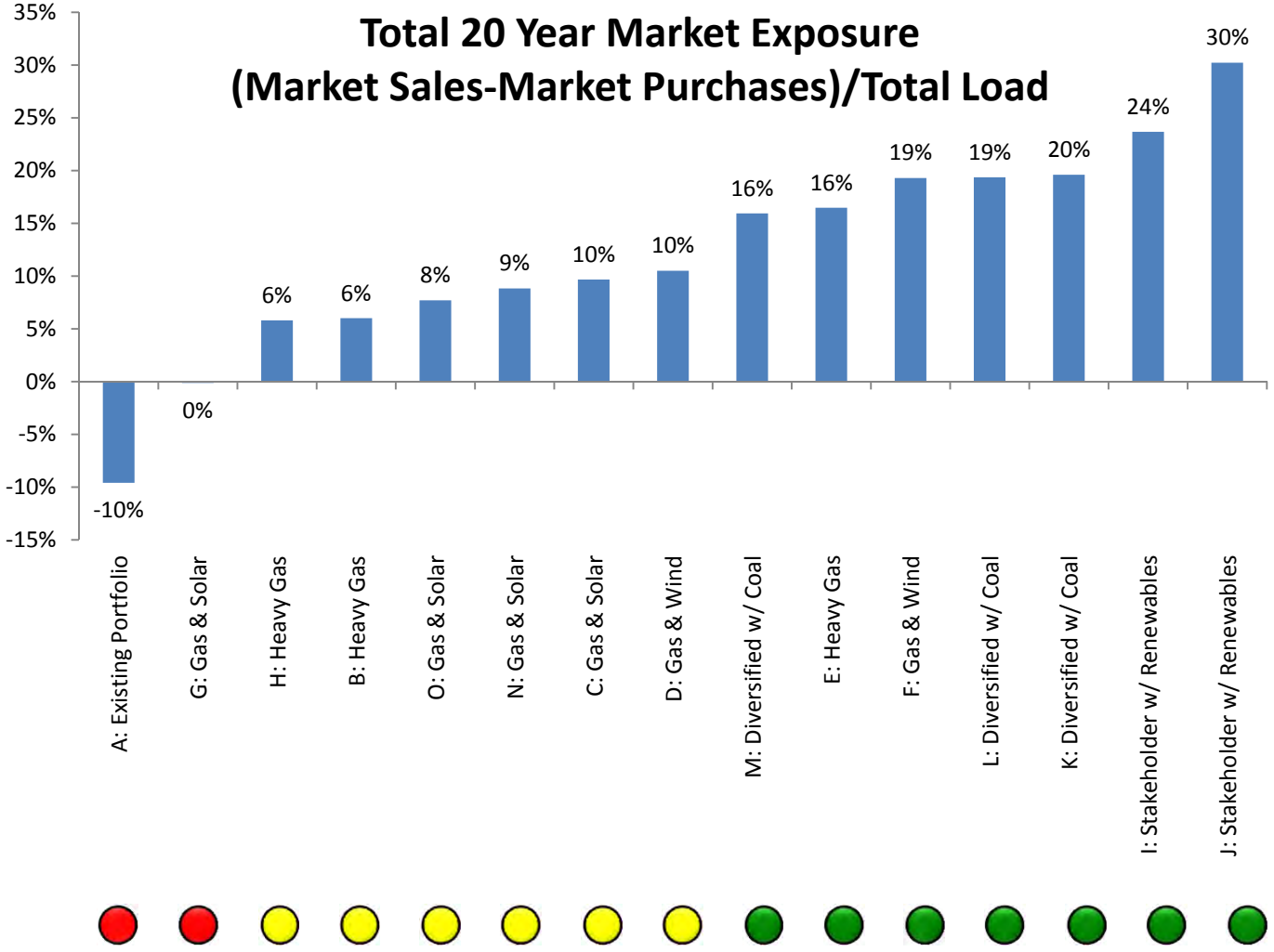


NPV = Net Present Value

VECTREN Energy Delivery

Balanced Energy/Flexibility Metric Summary

Flexibility Measure (Net Sales)



- Higher net sales provide a "cushion" against higher than expected load, as well as redundancy to quickly adapt to unexpected change
- Portfolios E, F, I, J, K, L, and M provide the most flexibility on this measure
- Portfolios A and G are net importers, and thus provide no hedge against unexpected changes of market prices

Market Flexibility Ranking

- Portfolios > 10%
- Portfolios between 0% and 10%
- Portfolios < 0%

VECTREN Energy Delivery

Balanced Energy Summary Metric

Portfolio	2036 UCAP (MW) % Largest Technology in Portfolio	Tech	Largest 24/7 Power Source	2036 Concentration (GWh) % Reliance Largest Technology	Tech	Balanced Energy Metric 2036 (# of Technologies)*	Market Flexibility Net Sales	Summary
Portfolio I	51%	Wind	2 CC	47%	Wind	5 (Gas, Wind, Solar, EE, Bat)	24%	
Portfolio J	44%	Wind	1 CC	49%	Wind	5 (Gas, Wind, Solar, EE, Bat)	30%	
Portfolio M	57%	Gas	1 CC, 1 Coal	70%	Gas	5 (Coal, Gas, Wind, Solar, EE)	16%	
Portfolio K	65%	Gas	1 CC, 1 Coal	72%	Gas	5 (Coal, Gas, Wind, Solar, EE)	20%	
Portfolio L	66%	Gas	1 CC, 1 Coal	73%	Gas	5 (Coal, Gas, Wind, Solar, EE)	19%	
Portfolio F	69%	Gas	1 CC	73%	Gas	4 (Gas, Wind, Solar, EE)	19%	
Portfolio E	84%	Gas	1 CC	91%	Gas	4 (Gas, Wind, Solar, EE)	16%	
Portfolio D	57%	Gas	1 CC	73%	Gas	4 (Gas, Wind, Solar, EE)	10%	
Portfolio O	70%	Gas	1 CC	82%	Gas	4 (Gas, Wind, Solar, EE)	8%	
Portfolio N	73%	Gas	1 CC	83%	Gas	4 (Gas, Wind, Solar, EE)	9%	
Portfolio C	78%	Gas	1 CC	89%	Gas	4 (Gas, Wind, Solar, EE)	10%	
Portfolio H	85%	Gas	1 CC	94%	Gas	4 (Gas, Wind, Solar, Bat)	6%	
Portfolio A	61%	Coal	4 Coal	83%	Coal	4 (Coal, Gas, Wind, Solar)	-10%	
Portfolio B	85%	Gas	1 CC	93%	Gas	3 (Gas, Wind, Solar)	6%	
Portfolio G	70%	Gas	1 CC	92%	Gas	3 (Gas, Wind, Solar)	0%	

- **Wind Purchased Power Agreement included in Wind*

- Portfolios I, K, L, and M have two distinct baseload generation options – a hedge against outages
- The lower the concentration on any one technology in the generation mix, the better the protection offered to Vectren against early obsolescence
- Greater # of technologies provide more diversity

2036 Largest # of Baseload Units

- Portfolios 3 units or above
- Portfolios with 2 units
- Portfolios with 1 unit

Concentration Ranking

- Portfolios < 60% (GWh % reliance)
- Portfolios between 61% and 79%
- Portfolios > 80%

Balanced Energy Metric

- Portfolios = 5 technologies
- Portfolios = 4 technologies
- Portfolios = 3 or less technologies

Market Flexibility Ranking

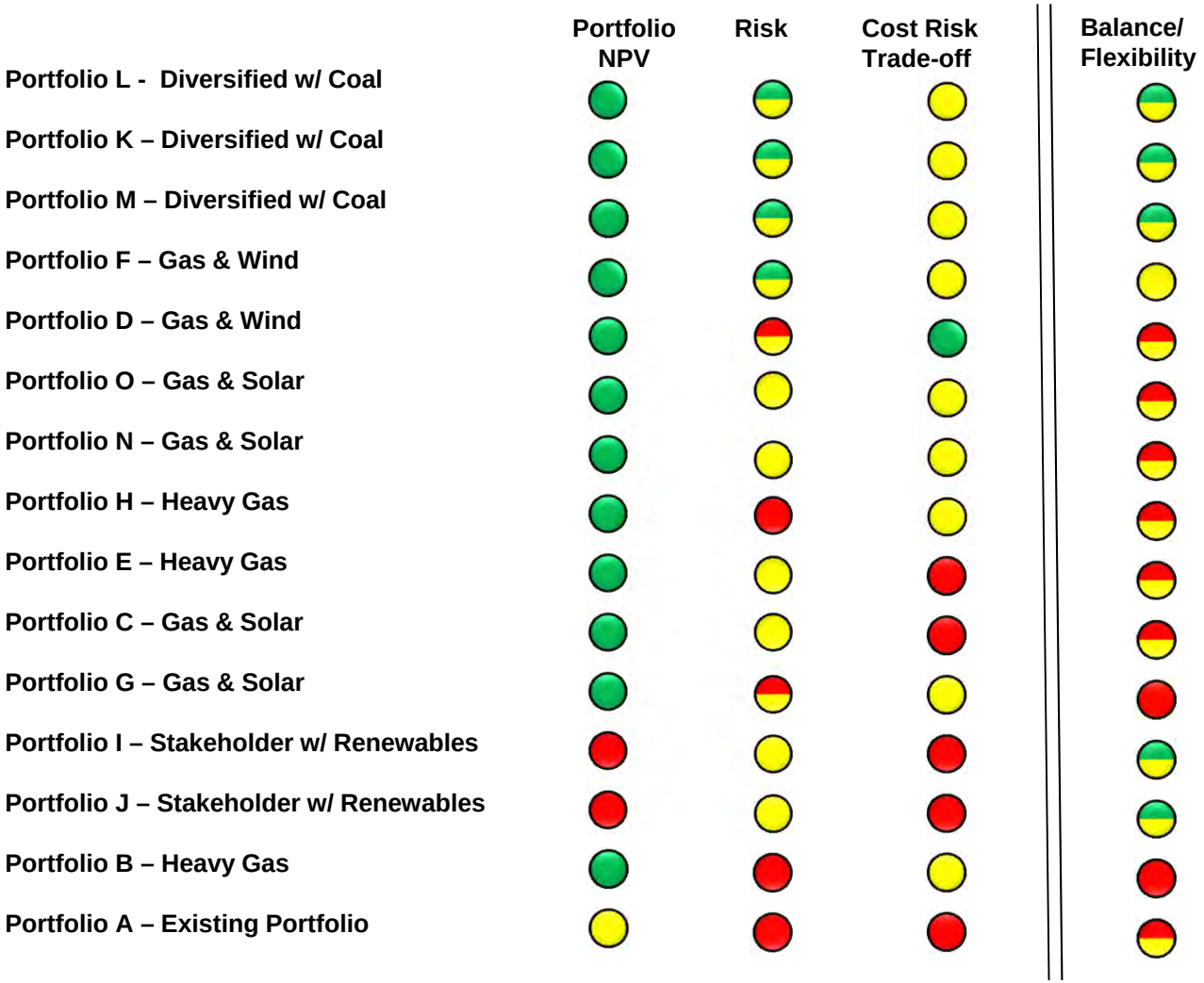
- Portfolios > 10%
- Portfolios between 0% and 10%
- Portfolios < 0%

UCAP = Unforced Capacity
EE = Energy Efficiency
GWh = Gigawatt Hour
Tech = Technology

MW = Megawatt
Bat = Battery Storage
CC = Combined Cycle

VECTREN Energy Delivery

Balanced/Flexibility Summary

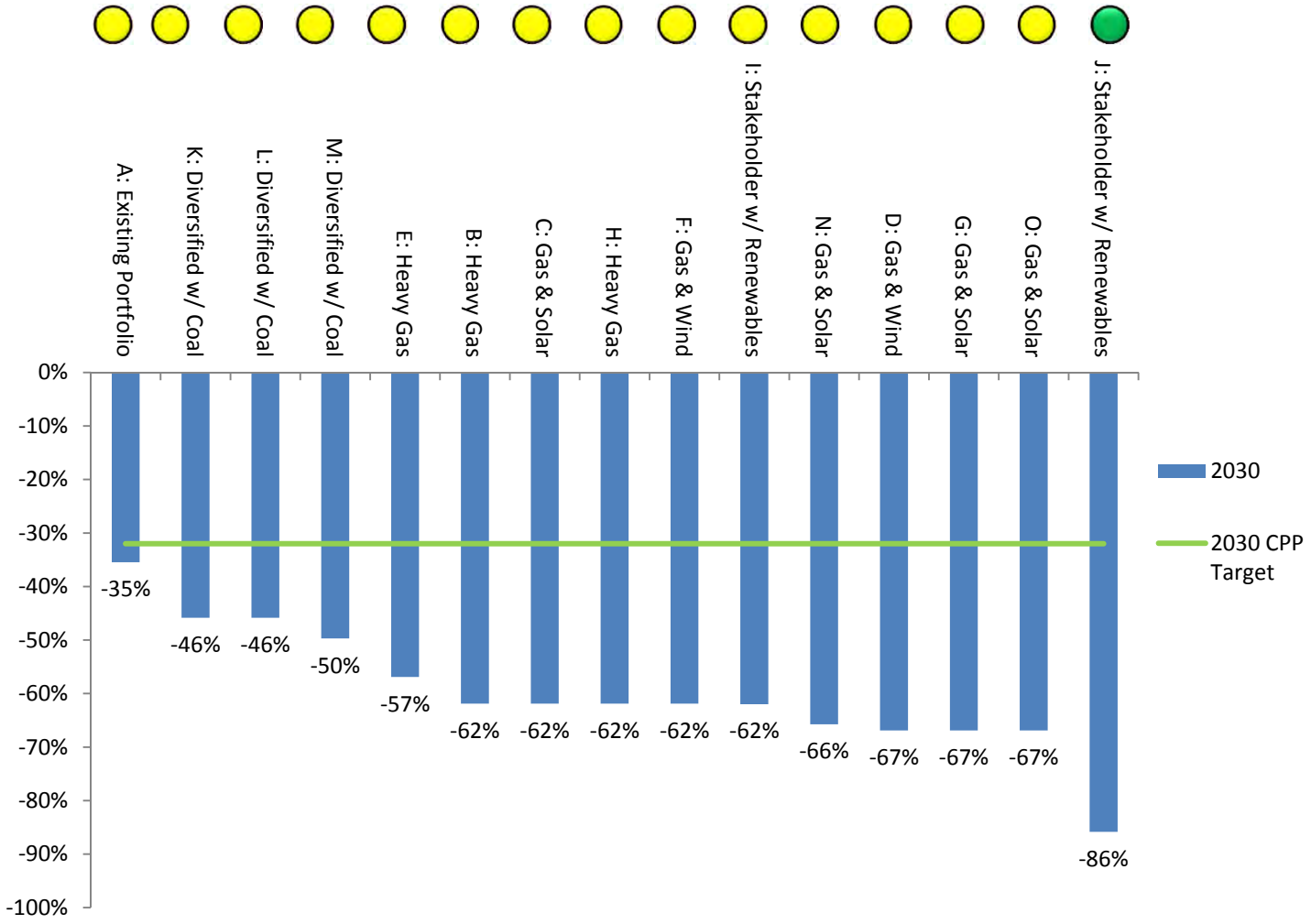


NPV = Net Present Value

VECTREN Energy Delivery

Environmental Metric Summary

Carbon Emission Reduction from 2012 Levels



Vectren has reduced Carbon emissions by 31% between 2005 and 2015

The CPP, if enacted, would require reductions of approximately 32% by 2030.

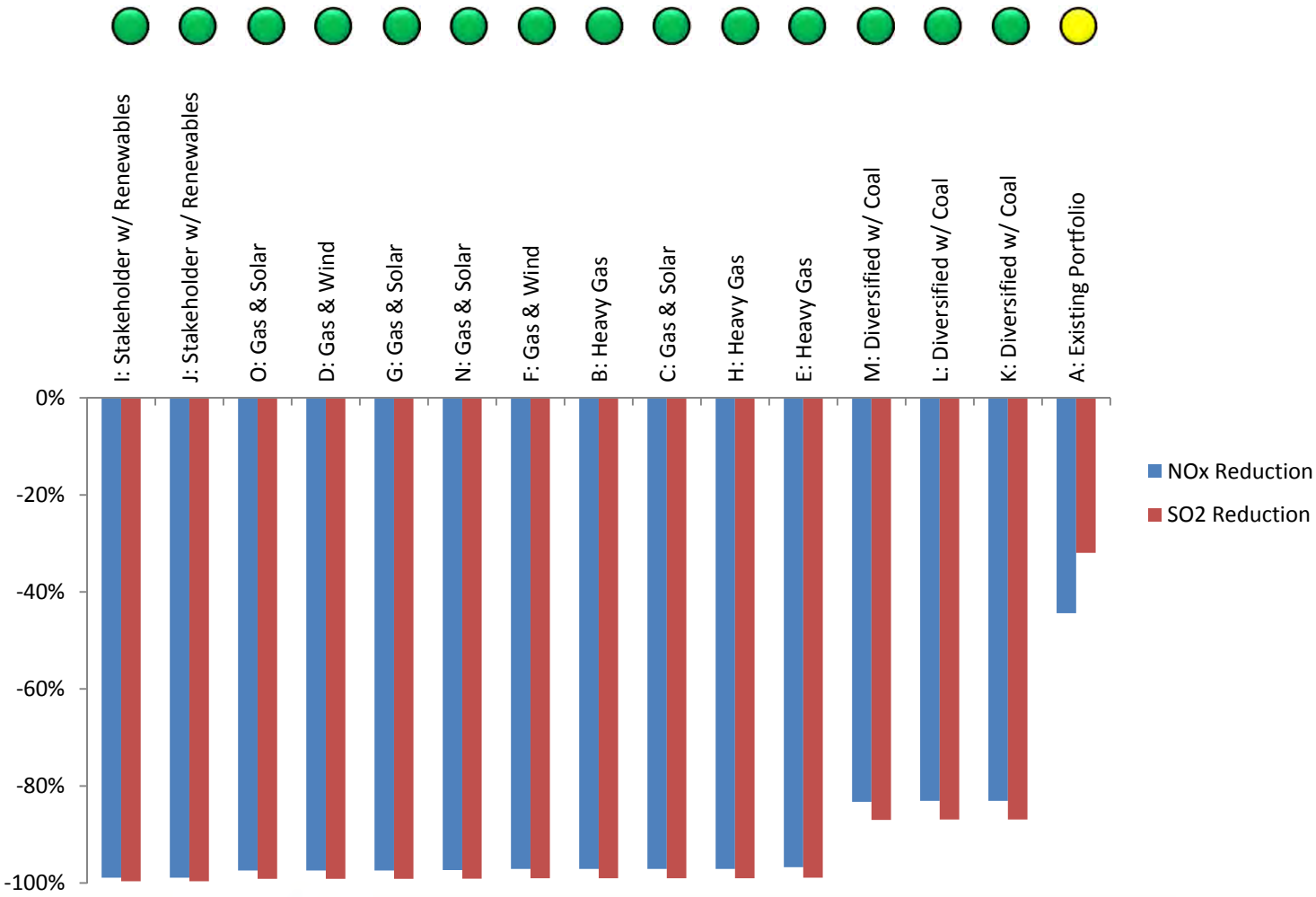
By 2030, every portfolio reduces carbon emissions by over 40% compared to 2012 except for Portfolio A. Note that coal units are not expected to run as often in the future.

All portfolios are judged as yellow in comparison to Portfolio J (Stakeholder), though all have significant reductions from 2012 levels.

CPP = Clean Power Plan

VECTREN Energy Delivery

2036 NO_X/SO_2 Emission Reduction from 2012-15 Levels



All exiting coal units are currently controlled for SO_2 and NO_X.

All portfolios are expected to achieve significant reduction in both NO_X and SO_2 emissions due to unit retirements and new resource additions.

All portfolios, except for Portfolio A, will exceed greater than 80% reduction in NO_X/SO_2 emission profile compared to the average of 2012-2015 level.

Existing Units are expected to dispatch less often than new gas capacity additions.

NO_X = Nitrogen Oxide SO_2 = Sulfur Dioxide

VECTREN Energy Delivery

Environmental Metric

	2030 % Carbon Reduction from 2012	NO_X/SO_2 Reduction 2036 vs. 2012-2015	Summary
J: Stakeholder w/Renewables	-86%		
D: Gas & Wind	-67%		
G: Gas & Solar	-67%		
O: Gas & Solar	-67%		
N: Gas & Solar	-66%		
I: Stakeholder w/Renewables	-62%		
F: Gas & Wind	-62%		
B: Heavy Gas	-62%		
C: Gas & Solar	-62%		
H: Heavy Gas	-62%		
E: Heavy Gas	-57%		
M: Diversified w/Coal	-50%		
K: Diversified w/Coal	-46%		
L: Diversified w/Coal	-46%		
A: Existing Portfolio	-35%		

- Portfolio L has 46% reduction in carbon from 2012 levels in 2036, exceeding CPP requirements by about 14%.
- Portfolio L achieves 61% reduction in carbon from 2005 levels in 2036.

% Carbon Reduction Rating

- Portfolios within 32%
- Portfolios between 33% and 75%
- Portfolio above 75%

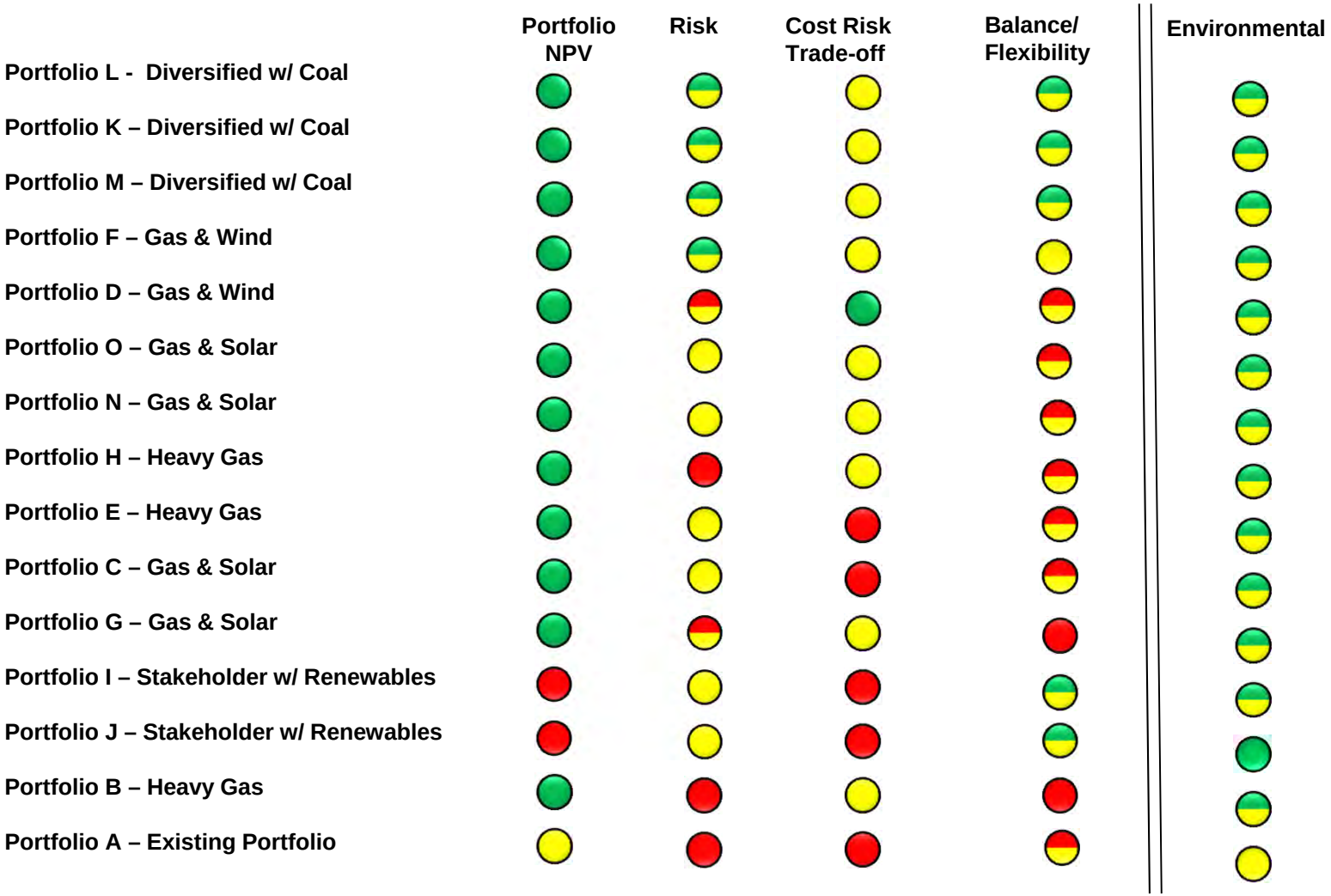
% NO_X and SO_2 Reduction Rating

- Portfolios below 30%
- Portfolios between 31% and 80%
- Portfolio above 80%

NO_X = Nitrogen Oxide SO_2 = Sulfur Dioxide CPP = Clean Power Plan

VECTREN Energy Delivery

Environmental Metric Summary



NPV = Net Present Value

VECTREN Energy Delivery

Local Economic Impact Metric Summary

Local Economic Impact

	Local Economic Impact	Summary
A: Existing Portfolio		
K: Diversified w/Coal		
L: Diversified w/Coal		
M: Diversified w/Coal		
I: Stakeholder w/Renewables		
B: Heavy Gas		
N: Gas & Solar		
O: Gas & Solar		
J: Stakeholder w/Renewables		
C: Gas & Solar		
D: Gas & Wind		
E: Heavy Gas		
F: Gas & Wind		
G: Gas & Solar		
H: Heavy Gas		

Closing FB Culley 3 by 2024 would have an adverse economic impact to the community, particularly hard hit Warrick County*

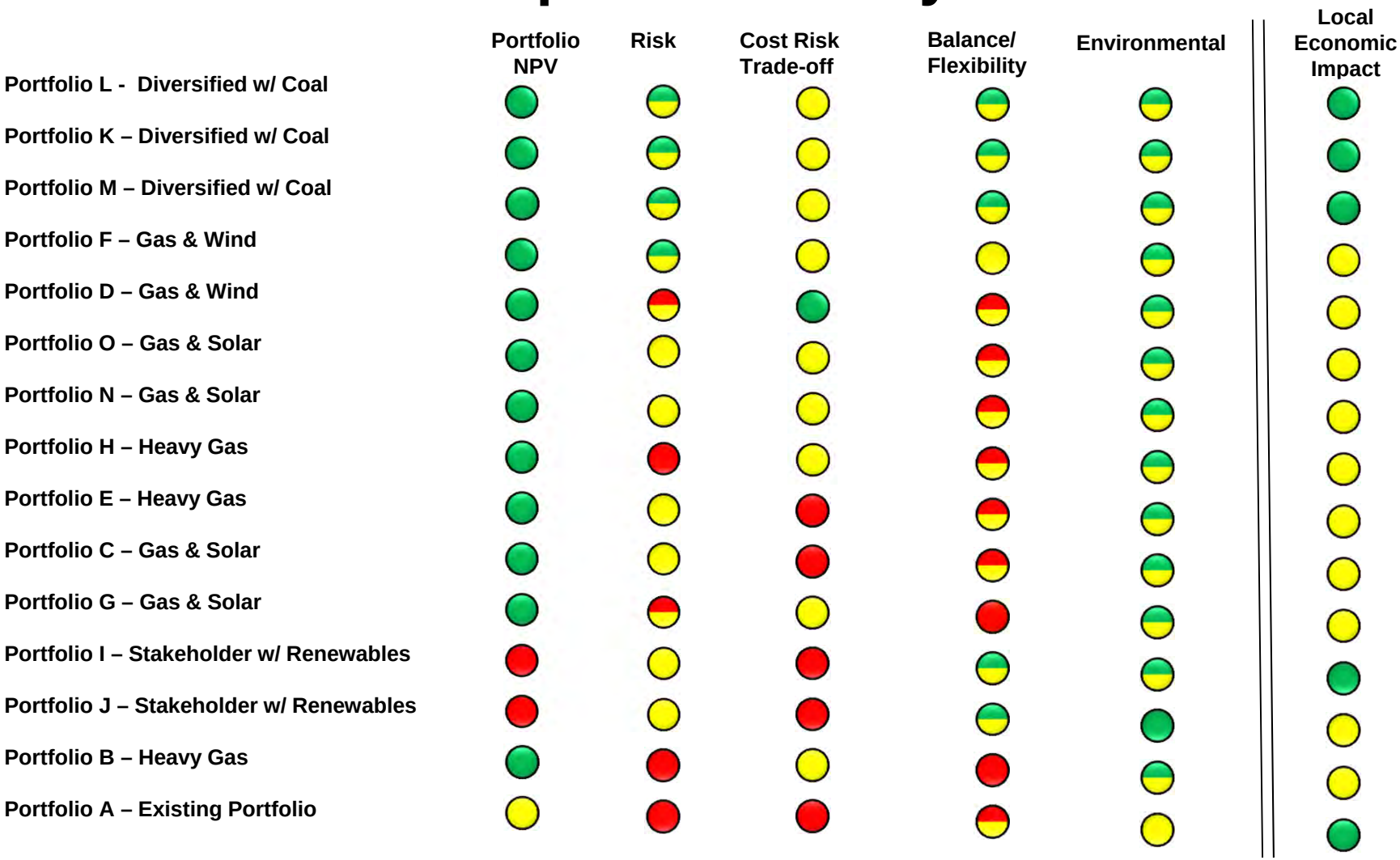
- Total 1-year Output Impact = $145 million
- Total 1-year State and Local Tax Impact = $7 million, of which Vectren's property taxes from Culley 3 alone currently contribute approximately $350 thousand dollars annually to Warrick County School Corp.
- Total Jobs Impact = 271, which includes 82 direct job losses at the plant

Building and operating a combined cycle gas plant within Vectren's service territory would minimize the economic impact to the community of closing the AB Brown Plant by 2024

- Total Output Impact of construction = $950 million
- Total Output Impact of operating the plant = $50 million per year

*Alcoa closed its smelter operation in the spring of 2016. The impact is compounded by FB Culley 2 by 2024. Economic impact study conducted by professors of economics and finance at the University of Evansville. Total economic impact based on an Economic Impact Study using IMPLAN social accounting system. Total impact includes direct, indirect, and induced effects.

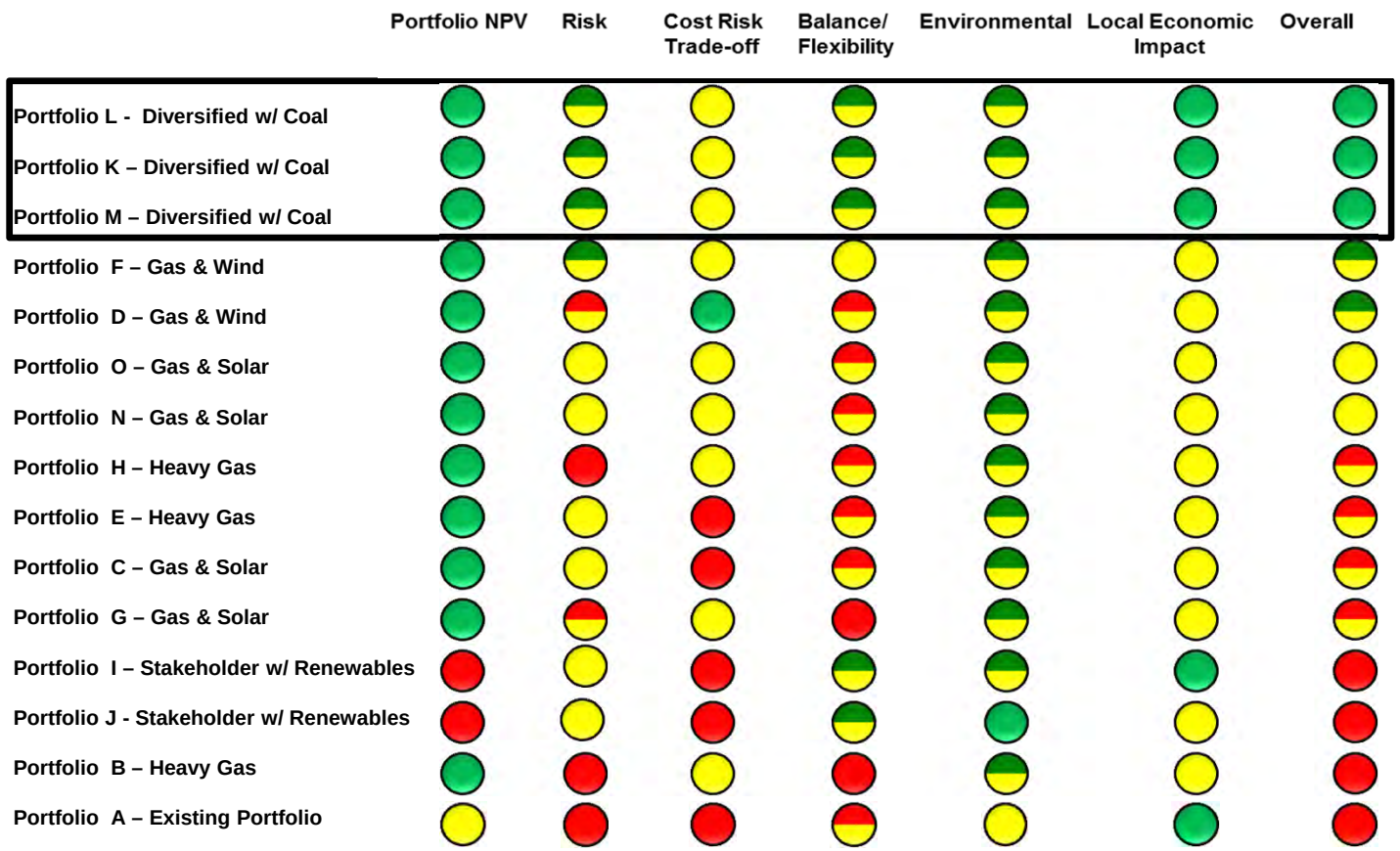
Local Economic Impact Summary



NPV = Net Present Value

VECTREN Energy Delivery

IRP Portfolio Balanced Scorecard



- Portfolios L, K, and M, the diversified with Coal Portfolios, perform best across all metrics
- Portfolio L has early renewables and low cost, highly efficient peaking capacity to back up intermittent renewable resources, mitigate capacity market risk, and allow for economic development opportunities

NPV = Net Present Value

VECTREN Energy Delivery

IRP Next Steps

2016 Vectren IRP Schedule	
December 6, 2016	3rd Stakeholder meeting summary
December 16, 2016	Vectren files 2016 IRP with the IURC
90 days after filing: March 16, 2017	Interested party deadline to submit comments to the IURC
120 days after filing: April 17, 2017	IURC Director's Draft Report publication expected
30 days after submission of the Director's Draft Report: May 17, 2016	Interested party deadline to submit comments on the draft report
30 days following the deadline for supplemental response comments: June 17, 2017	Final Director's Report publication expected

IURC = Indiana Utility Regulatory Commission
IRP = Integrated Resource Plan