2022 Integrated Resource Plan (IRP)

Public Advisory Meeting #1 Minutes

Date: Monday, Jan. 24, 2022
Time: 10:00 a.m. to 3:00 p.m. (EST)
Location: Virtual via Microsoft Teams

Agenda:

Time	Topic	Speakers
Morning Starting at 10:00 AM	Safety and Virtual Meeting Schedule and Protocols	Chad Rogers, Senior Manager, Regulatory Affairs, AES Indiana Brandi Davis-Handy, Chief Public Relations Officer, AES US Utilities
	Welcome and Overview of AES Indiana	Kristina Lund, President & CEO, AES US Utilities
	IRP Planning and Model Overview	Erik Miller, Manager, Resource Planning, AES Indiana Will Vance, Senior Analyst, AES Indiana
	2019 IRP Recap	Aaron Cooper, Chief Commercial Officer, AES US Utilities Erik Miller, Manager, Resource Planning, AES Indiana
	Overview of Existing Resources, Replacement Resource Options and Future IRPs	Aaron Cooper, Chief Commercial Officer, AES US Utilities Erik Miller, Manager, Resource Planning, AES Indiana
Break 11:45 AM – 12:15 PM	Lunch	
Afternoon Starting at 12:15 PM	Baseline Energy and Load Forecast	Eric Fox, Director, Forecasting Solutions, Itron Mike Russo, Forecast Consultant, Itron
	Electric Vehicle (EV) and Solar PV Forecasts	Jordan Janflone, EV Modeling Forecasting, GDS Associates Patrick Burns, PV Modeling Lead and Regulatory/IRP Support, Brightline Group
	DSM Market Potential Study Introduction	Jeffrey Huber, Overall Project Manager and MPS Lead, GDS Associates Jacob Thomas, Market Research and End-Use Analysis Lead, GDS Associates Melissa Young, Demand Response Lead, GDS Associates
	Final Q&A and Next Steps	

Meeting Summary

Agenda and Introductions

Stewart Ramsay, Managing Executive, Vanry & Associates
(Slides 1 – 3)

Moderator Stewart Ramsay began AES Indiana's 2022 IRP Public Advisory Meeting #1 by introducing himself and providing an overview of the agenda for the meeting. He then introduced members of AES Indiana's IRP team and elaborated on the various roles of AES Indiana's IRP team. Stewart then asked members from various stakeholder groups in attendance to introduce themselves and their colleagues who were in attendance.

Virtual Meeting Protocols and Safety

Brandi Davis-Handy, Chief Public Relations Officer, AES US Utilities
Chad Rogers, Senior Manager, Regulatory Affairs, AES Indiana
(Slides 4 – 9)

Brandi Davis-Handy introduced herself and shared AES Indiana hoped the first IRP meeting will be an engaging conversation and stakeholders will contribute to help shape AES Indiana's IRP process. She then detailed virtual best practices for the meeting, including information on stakeholder questions and audio/video connectivity. She explained the AES Indiana IRP team will be responding to questions using the Microsoft Teams Chat function and leadership of AES Indiana will also respond to questions live in their presentations.

Brandi Davis-Handy then provided an overview of the IRP public advisory meeting process by stating it will consist of five meetings and presentation resources will be provided to stakeholders a week prior to those meetings. She also stated certain topics for the future meetings will be detailed later in the presentation.

Stakeholder Wendy Bredhold, a representative of the Sierra Club, asked if AES Indiana would provide the date for meeting #2 today. AES Indiana responded it has not yet set the date for the second IRP stakeholder meeting. AES Indiana will publish that date at least 30 days in advance.

Chad Rogers introduced himself and related AES Indiana's purpose of "accelerating the future of energy, together" and values of "safety first," "highest standards," and "all together" to the IRP process. He explained these values reflect AES Indiana's dedication to improving lives and making a lasting difference in the communities it interacts with through "accelerating the future of energy." He described the IRP process as a process AES Indiana completes "together" with its stakeholders, which ultimately determines the "future of energy" for AES Indiana and its stakeholders. He then described in detail each of AES Indiana's values, including safety, which he stated is at the core of everything AES Indiana does. Chad then provided a safety message meant to make the virtual work environment safer, which included guidance on the importance of securing accounts, thinking before clicking, protecting networks, sharing data responsibly, and being prepared to identify cyber-attacks.

Welcome & Overview of AES Indiana

Kristina Lund, President & CEO, AES US Utilities
(Slides 10 – 15)

Kristina Lund introduced herself and welcomed stakeholders to the kick-off of AES Indiana's 2022 IRP. Kristina noted AES Indiana has provided safe, reliable, and cost-effective energy for nearly 100 years. She stated new technologies, including renewable generation resources, battery energy storage, automation in data analysis for transmission/distribution systems, and consumer-focused tools and programs, are driving a "once in a lifetime" transformation in the energy industry. She explained the IRP process allows AES Indiana to gather stakeholders' input and analyze the future of AES Indiana's generation resources. She then thanked stakeholders for their time and input in the IRP process.

Kristina Lund next explained while AES Indiana underwent a rebranding effort from Indianapolis Power & Light to AES Indiana, AES Indiana's commitment to its community and customers remains the same. She explained the new brand reflects the AES's global expertise that is being used to deliver reliable, greener, and smarter energy solutions for customers in Indiana. She elaborated on AES's global expertise and history of innovation by highlighting AES's global portfolio of solar and wind resources, battery storage resources, digital customer engagement platforms, and seven awards from Edison Electric Institute for innovative projects. Kristina then gave an overview of AES, including AES is a Fortune 200 company that serves over 2.5 million people and operates in four continents, 14 countries, and six utilities. Kristina shared prior to her and her family's move to Indianapolis, she served as Regional Chief Financial Officer for AES's Eurasia and Central America business units, which allowed her to gain experience with various structures and stages of energy markets and witness the global technological changes driving energy sector transformation around the world. She noted AES has been recognized for its commitment to sustainability by numerous organizations, including being an eight-time honoree on the list of most ethical companies as well as included on lists such as the FTSE4Good, which is an index of stocks for sustainability focused investors.

Kristina Lund then provided an overview of AES Indiana's footprint and generation portfolio as of the date of the meeting. She stated AES Indiana proudly serves more than 500,000 customers in Indianapolis and parts of the surrounding eight counties. She stated AES Indiana currently has 3.6 GW of generation resources comprised of natural gas, coal, wind, solar, and oil technologies. She recalled AES Indiana's preferred resource portfolio in its 2019 IRP included the retirement of Petersburg Units 1 and 2 and the replacement of those units with solar and storage resources. She described the two large solar projects in construction or advanced development, Hardy Hills Solar located in Clinton County, Indiana and Petersburg Energy Center located in Pike County, Indiana. Kristina explained the IRP is designed to look forward, and AES Indiana will consider issues associated with the future of energy, such as technological changes/improvements and fuel source considerations. Kristina detailed the key issue AES Indiana will consider is how AES Indiana and stakeholders get from AES Indiana's resource portfolio that exists today to the portfolio of the future, while meeting AES Indiana's customers' needs every step of the way.

Kristina Lund then explained AES Indiana's strategy to meet its customers' needs of safe, reliable, and affordable energy while creating the "future of energy" is captured in its inclusive, clean energy transition. She stated this inclusive, clean energy transition has four pillars: (1) Customer; (2) Smart Grid; (3) Sustainability; and (4) Workforce of the Future. Kristina detailed the Customer pillar recognizes customers' needs are changing as sustainability is becoming more important, and AES Indiana seeks to create value for its customers in order to be their energy partner in the future. Kristina then detailed AES Indiana's Smart Grid pillar, which will use sophisticated tools to automate the grid and use analytics to optimize AES Indiana's operations. She next detailed the Sustainability pillar, which focuses on the use of new technologies that are not only sustainable and clean but are also cost effective for customers. Kristina lastly detailed the Workforce of the Future pillar, which recognizes every part of AES Indiana's business is being changed by new technologies. She explained the Workforce of the Future pillar is designed to help AES Indiana employees develop new skills that accompany the new technologies with a focus on incorporating diversity, equity, and inclusion in AES Indiana's workforce, partners, and suppliers. Kristina shared AES Indiana believes an

inclusive, clean energy transition is essential to drive economic and community development in AES Indiana's service territory.

IRP & Planning Model Overview

Erik Miller, Manager, Resource Planning, AES Indiana
Will Vance, Senior Analyst, Resource Planning, AES Indiana
(Slides 16 – 31)

Erik Miller introduced himself and expressed AES Indiana is excited about the IRP process and collaborating with its stakeholders. Erik explained this section was intended to review the basics of the IRP at a high-level. He provided the statutory requirements of the IRP process, which requires utilities to develop a plan with stakeholder input every three years that provides a 20-year look at how utilities will serve their load and includes modeling and analysis to develop a preferred resource portfolio and a three-year short-term action plan. He then elaborated AES Indiana will use qualitative factors, including stakeholder input, as well as quantitative factors, including modeling and analysis, to develop the preferred resource portfolio.

He then provided an overview of the stakeholders' role in the IRP process, which includes five public advisory meetings and five technical meetings (available to stakeholders with nondisclosure agreements ("NDAs")). Erik emphasized AES Indiana will consider stakeholder input in all forms in the selection of AES Indiana's Preferred Resource Portfolio.

Stakeholder Bhawramaett Broehm asked whether individuals who do not currently have an NDA in place will be able to participate in the technical meetings. AES Indiana replied it plans to share confidential information at its technical meetings. Therefore, an NDA will be required to attend those meetings. AES Indiana encouraged stakeholders to contact Teresa Morton-Nyhart at Barnes & Thornburg LLP to get a copy of its standard NDA. Teresa can be reached at teresa.nyhart@btlaw.com.

Erik Miller then provided an overview of the IRP timeline, which includes the dates of the public advisory meetings, technical meetings, and the activities AES Indiana and its contractors have already been working on, including the market potential study ("MPS"), load forecast, distribution system planning, and other inputs and assumptions. Erik explained these inputs would feed into the core IRP modeling, which Erik expects will start within a few months and continue through summer 2022. Erik also previewed AES Indiana expects to issue a request for proposals ("RFP") at some point in 2022 to inform the IRP.

Erik Miller provided a description of AES Indiana's Public Advisory Schedule, which detailed major issues that will be discussed in each meeting. He qualified this list by stating topics for Public Advisory Meetings #2-5 are subject to change depending on modeling progress. Erik then provided an overview of the IRP Process in more detail. He explained the assumptions are inputs used in the Core IRP Modeling & Evaluation items. Erik highlighted the Demand Side Management ("DSM") MPS will allow AES Indiana to model DSM resources against other supply-side resources to potentially be selected as an energy resource in the IRP. He also explained AES Indiana will use replacement resource costs from its 2020 RFP to create an average cost by resource technology (e.g., solar, wind, etc.) and compare that data to Wood

Mackenzie and other resources. Erik also stated AES Indiana intends to issue an RFP later in 2022, which will be used for price sensitivity analysis and to check against the replacement resource costs. He explained AES Indiana's distribution system planning will assess impacts from electric vehicles ("EVs") and distributed generation ("DG") and will be used to develop load shapes to inform the IRP analysis. Erik explained Itron will be presenting on the base load scenario today but are working on the high and low scenarios for future meetings.

Moderator Stewart Ramsay highlighted Erik Miller stated AES Indiana will issue an RFP, and asked Erik if AES Indiana receives attractive proposals, could AES Indiana use those proposals to form a portion of its resources going forward. Erik stated that is correct, and AES Indiana hopes to have an RFP issued prior to completing the IRP process so it can execute on the RFP quickly upon the selection of AES Indiana's Preferred Resource Portfolio.

Erik explained the inputs he discussed are then entered into the Capacity Expansion Model, which analyzes economic retirements and replacements. Other inputs, such as scenario analysis or power and commodity price forecasts, are considered in the Capacity Expansion Model as well.

Erik stated the portfolios identified in the Capacity Expansion Model are then evaluated using the production cost model, which essentially calculates the cost for the portfolios and then takes those costs and completes a present value revenue requirement ("PVRR") analysis. As Erik explained, the PVRR analysis calculates the ultimate cost of a resource to customers. Erik stated risk using stochastic analysis is also evaluated at this step. After this is completed, he stated the portfolios will be evaluated, the Preferred Resource Portfolio will be selected, and the Short-Term Action Plan will be developed. Erik stated the IRP also drives filings with the Indiana Regulatory Commission ("IURC"), including DSM filings and Certificate of Public Convenience and Necessity filings.

Stakeholder Anna Sommer, who represents Energy Futures Group, asked AES Indiana why it is calculating revenue requirements outside of the EnCompass model rather than using EnCompass. Erik Miller replied that AES Indiana is still deciding whether to use EnCompass or a method similar to the method used in AES Indiana's 2019 IRP where it used PowerSimm and a spreadsheet PVRR. Erik stated both methods should produce similar results, but AES Indiana has not yet decided which to use. Anna agreed that both methods should produce similar results and noted EnCompass could reduce the workload of AES Indiana's IRP team.

Erik then described AES Indiana's IRP Portfolio Metrics and Scorecard, which will be used to evaluate the portfolios and scenarios. He stated AES Indiana plans to expand upon its 2019 IRP Portfolio Metrics, which were cost, environmental, and risk, by potentially adding reliability and other metrics, as the IURC and Indiana General Assembly have been increasingly concerned about reliability.

Will Vance provided greater details on EnCompass's capacity expansion and production cost modeling. He explained capacity expansion is the part of the modeling that allows the model to select new resources to fill a capacity shortfall. He then explained production cost modeling dispatches units to a power price using fuel costs. He detailed EnCompass will be using both modeling types to estimate a present value revenue requirement, which is essentially the total

cost to customers, for the different portfolios. He also highlighted the use of EnCompass by other utilities to support regulatory filings in 17 states.

Will Vance then explained the use of EnCompass allows AES Indiana to model thermal, renewable, battery storage, and load resources with hourly granularity. He explained the chart on Slide 23 of the IRP Public Advisory Meeting #1 presentation demonstrates the constraints and considerations that Encompass uses in its modeling. He stated this allows the Encompass model to simulate the MISO market while adhering to constraints AES Indiana applies, such as outage schedules. He stated AES Indiana will also use EnCompass for stochastic analysis, which uses statistical distributions of inputs to simulate a distribution of possible outcomes, which allows AES Indiana to understand the risks associated with particular portfolios. He then contrasted stochastic analysis to deterministic analysis, which uses a single forecast path that arrives at a singular result and is especially useful for scenario analysis and understanding key model drivers. He explained AES Indiana will use both stochastic and deterministic modeling for its 2022 IRP.

Stakeholder Anna Sommer stated the Energy Futures Group is especially interested in the stochastic methodology AES Indiana will be using, the number of draws, and how AES Indiana will determine it reached convergence. Anna acknowledged the issue might be best suited for a future meeting or technical meeting. AES Indiana replied this will be a future discussion topic, and AES Indiana plans to work with ACES but will consider stakeholder input. Anna was glad to hear AES Indiana is working with ACES on stochastic methodology.

Will Vance elaborated on the advantages of Encompass. He stated a major advantage to using EnCompass is its quick run times should allow AES Indiana to perform more scenario analysis and receive quicker feedback. He then explained because the capacity expansion model is deterministic, the results are often more intuitive. He stated EnCompass allows user input for optimization and is considerably transparent by providing hourly renewable and load profiles.

2019 IRP Recap

Aaron Cooper, Chief Commercial Officer, AES US Utilities
Erik Miller, Manager, Resource Planning, AES Indiana
(Slides 25 – 32)

Erik Miller began the recap of AES Indiana's 2019 IRP by summarizing AES Indiana's 2019 IRP Short-Term Action Plan, which included retiring 630 MW of coal generation by 2023; replacing 200 MW of firm capacity via a competitively bid all-source RFP; saving 130,000 MWh per year of new DSM as part of the 2021-23 DSM Plan; and monitoring market conditions leading into the 2022 IRP.

Aaron Cooper introduced himself and thanked the stakeholders for their interest and participation in AES Indiana's IRP process. He highlighted a major item identified in the 2019 IRP was to retire Petersburg Units 1 and 2, which represented 630 MW of coal generation, and replace those units with renewable generation resources. Aaron detailed AES Indiana issued an all-source RFP in December 2019 and internal experts at AES Indiana collaborated with

Sargent and Lundy throughout this process. He explained AES Indiana retired Petersburg Unit 1 at the end of May 2021 and plans to retire Petersburg Unit 2 in May of 2023. He explained AES Indiana selected two projects from its 2019 RFP process, Hardy Hills Solar and the Petersburg Energy Center. Aaron then detailed the impact of the actions AES Indiana completed in response to its 2019 IRP Short-Term Action Plan on carbon intensity. He demonstrated AES Indiana's actions related to its 2019 IRP Short-Term Action Plan reduced carbon intensity for AES Indiana's portfolio by almost 50% by 2024 compared to 2015.

Stakeholder Ray Wilson, a representative of Hoosier Interfaith Power & Light, asked if AES Indiana could provide actual tons of CO_2 reduction in addition to CO_2 intensity reduction. AES Indiana explained it appreciated the question, but it did not have that information available to share at Meeting #1. However, AES Indiana stated it will provide this information in future meetings, especially as it discusses scenario results and the IRP Scorecard in Meeting #4. AES Indiana stated if this information is needed sooner, AES Indiana will arrange a method of sharing it.

Aaron Cooper then described Hardy Hills Solar in greater detail, which is a 195 MWac solar plant north of Indianapolis in Clinton County developed by Invenergy. Aaron explained the 195 MWac rating represents the plant's installed capacity ("ICAP"). As noted on this Slide 29, he stated Hardy Hills will contribute approximately 98 MW of accredited capacity when it is completed in 2023, which is based on the facility's unforced capacity ("UCAP"). He explained UCAP is the percentage of the ICAP available after a unit's forced outage rate is considered. He described the UCAP value for renewable resources, such as solar, accounts for the intermittency of output associated with renewable resources and represents the level of output expected at the time of the system peak. Aaron then described the Petersburg Energy Center in greater detail, which is a 250 MWac solar plant and 180 MWhdc battery energy storage system ("BESS") developed by NextEra. He detailed the Petersburg Energy Center will contribute approximately 168 MW of UCAP when it comes online in 2024.

Erik Miller then discussed a summary of the IURC's Director's Comments to AES Indiana's 2019 IRP. He began this discussion by addressing the Director's Comments related to resource optimization and risk. He addressed the Director's concerns there was a general lack of clarity around the model and methodology, namely PowerSimm's stochastic capacity expansion methodology caused confusion and lacked explanation. Erik stated these items are being addressed in AES Indiana's 2022 IRP through its use of EnCompass's more intuitive, deterministic modeling for capacity expansion and by providing better explanation of the model and methodology in stakeholder meetings. Erik also stated AES Indiana is contracting with ACES to provide expert, third-party expertise regarding resource options and modeling approaches to address the Director's suggestion that future IRPs would benefit from industry expert's judgements to evaluate whether there is a rationale for hardwiring certain resources. Erik Miller then explained AES Indiana plans to satisfy the Director's concerns with AES Indiana's DSM modeling by utilizing EnCompass, which will allow for optimization using shorter duration bundles, collaborating with stakeholders and consultants to consider alternative approaches for measure bundling, and working with Lawrence Berkeley National Laboratory ("LBNL") and the National Renewable Energy Laboratory ("NREL") to capture hourly shapes associated with DSM measures. Erik then discussed the Director's concerns related to load forecasting. He noted while the IURC did not recommend AES Indiana use Itron, the

Commission mentioned they appreciated Itron's report that was included in AES Indiana's 2016 IRP. AES Indiana agrees Itron's report is sophisticated and adds value, which led to AES Indiana contracting Itron for its load forecast. He noted Itron's report will address many of the Director's concerns, including analysis on the appropriateness of base temperature for weather normalization. Additionally, Erik noted AES Indiana will discuss street lighting usage and how it is modeled in the load forecast as well as discuss additional risk and uncertainty associated with the load forecasting scenarios.

Stakeholder Anna Sommer stated the Energy Futures Group appreciates AES Indiana's move to a model that makes optimization clearer and thanked AES Indiana for its effort.

Overview of Existing Resources

Aaron Cooper, Chief Commercial Officer, AES US Utilities
Erik Miller, Manager, Resource Planning, AES Indiana
(Slides 32 – 38)

Erik Miller began the discussion of AES Indiana's existing resources by explaining the chart on Slide 33 represents AES Indiana's starting portfolio measured against AES Indiana's summer UCAP obligation starting in 2023. Erik noted AES Indiana is expected to require additional capacity beginning in 2028 and stated AES Indiana's IRP will help inform AES Indiana on how it will satisfy this need.

Aaron Cooper then discussed AES Indiana's current generation mix. He explained the information on Slide 34 reflects AES Indiana's retirement/plans to retire Petersburg Units 1 and 2, as well as the additions of Hardy Hills Solar and the Petersburg Energy Center. He also explained Slide 34 identified each resource technology's aggregate ICAP and UCAP values and also represents those as a percentage of the total portfolio. Aaron then discussed AES Indiana's existing resources by technology and provided the unit's name, reference name, technology, ICAP, UCAP, in-service year, and estimated last year in-service. Aaron clarified while AES Indiana is discussing Petersburg Unit 2 on Slide 35, it was not included in the totals for Slide 34. He explained AES Indiana's existing coal units are Petersburg Units 2-4. He stated Petersburg Unit 2 is expected to retire in 2023, and Petersburg Units 3 and 4 make up roughly 1,000 MW of ICAP and represents around 29% of AES Indiana's generation portfolio by ICAP. Aaron then explained AES Indiana's existing gas resources, which consist of Eagle Valley Combined Cycle Gas Turbine ("CCGT"), several plant assets at Harding Street Station, and two units at Georgetown Station. He explained natural gas resources account for approximately 47% of AES Indiana's generation portfolio by ICAP. Aaron then discussed AES Indiana's existing renewable resources, which consist of Hardy Hills Solar, the Petersburg Energy Center, and three purchase power agreements ("PPA"). He noted the existing renewable resources are based on the current MISO capacity credit levels and represent 24% of AES Indiana's ICAP.

Erik Miller discussed the evolution of AES Indiana's Air Conditioner Load Management, which started in the early 2000s with an air conditioner switch program and has transformed to a program with 56,000 switches installed, 20,000 of which are smart thermostats. He stated AES Indiana's Air Conditioner Load Management program accounted for 46.3 MW of registered capacity in 2021. He continued by discussing AES Indiana Conservation Voltage Reduction

program, which optimizes the voltage for AES Indiana Customers and benefits AES Indiana by stabilizing the distribution system and benefits customers by reducing bills through energy efficiency ("EE"). Erik stated AES Indiana's Conservation Voltage Reduction program accounted for roughly 16.8 MW of MISO capacity value in 2021. He then discussed Rider 14, which is AES Indiana's interruptible/curtailable tariff and represents 1.1 MW of MISO capacity credit for 2021. Erik then detailed AES Indiana's progress with its EE program since 2011, which in 2021 accounted for roughly 500 MW of peak demand – roughly equivalent to a gas plant – that is being avoided due to the program.

Replacement Resource Options

Erik Miller, Manager, Resource Planning, AES Indiana
(Slides 39 – 41)

Erik Miller prefaced the discussion of AES Indiana's replacement resource options by stating AES Indiana will cover this topic in more detail in Public Advisory Meeting #2. Erik stated AES Indiana is evaluating commercially available replacement technologies in the IRP, including DSM/EE, wind, solar (including utility-scale, commercial and industrial ("C&I"), and residential, storage (standalone, solar + storage, and wind + storage), and natural gas resources. He then discussed emerging technologies described on Slide 41, which includes green hydrogen, small modular reactors, gravity energy storage, pumped-hydro storage, and carbon capture and sequestration, recognizing many of these technologies have not been tested and may not be cost effective. Erik stated AES Indiana is excited for these emerging technologies but does not plan to include them in its IRP until they are proven to be commercially viable. Erik expressed AES Indiana is open to stakeholder input regarding emerging technologies as AES Indiana goes through its 2022 IRP process.

Stakeholder Anna Sommer asked AES Indiana whether demand response ("DR") measures considered for replacement resources cover both opt-in and opt-out customers and asked for Erik Miller to clarify whether participation under AES Indiana's interruptible tariff has any relation to opt-in and opt-out customers. Erik agreed participation under its interruptible tariff is not related to a customer's opt-in/out status. Anna followed up by stating that is what her question is addressing, and it seems the analysis is different for DR and EE programs. Erik acknowledged he understood Anna's point and explained AES Indiana and GDS are looking at its interruptible tariff as part of the MPS. He noted AES Indiana is considering a DR bundle under its interruptible tariff for the 2022 IRP.

Stakeholder Ray Wilson asked Erik Miller whether AES Indiana will consider residential battery and solar resources as replacement resources. Erik stated AES Indiana is modeling utility-scale solar, but AES Indiana is still deciding whether to consider residential battery and solar resources as replacement resources. Moderator Stewart Ramsay followed up by asking if AES Indiana's exclusive modeling of utility-scale solar precluded it from considering residential and community solar. Erik stated AES Indiana is still working on this, and the current models consider forecasted behind the meter generation, which is organic and not driven by AES Indiana.

Sales, Energy and Demand Trends

Eric Fox, Director, Forecasting Solutions, Itron
Erik Miller, Manager, Resource Planning, AES Indiana
(Slides 42 – 55)

Eric Fox introduced himself and the Itron team. He shared Itron has over 30 years of experience developing forecast models for customers worldwide, and Itron is a leading provider of forecasting solutions to independent system operators, energy retailers, public utilities, municipalities, and cooperatives.

Eric Fox then described AES Indiana's customer class mix by sales (39% commercial, 39% residential, and 22% industrial) and total number (88.45% residential, 11.51% commercial, and 0.04% industrial). Eric next described AES Indiana's total customers, peak load (actual and weather normalized), and total annual energy sales (actual and weather normalized). He stated while AES Indiana experienced strong customer growth in its service area, there has been a fairly strong decline in overall energy use. Eric then provided a breakdown of these metrics by customer class starting with residential customers, which followed the overall trend of steady growth in the number of customers but declines in the total and average sales. He also noted COVID-19 caused residential total and average energy use to increase, but energy sales for residential customers remain trending down. He then described the factors driving customer growth, including increasing population and household growth, a strong regional economy, and affordable housing.

Eric Fox next provided a breakdown of the customer metrics for commercial customers. Eric stated the number of commercial customers is growing at roughly 0.6% per year, while sales are declining at roughly 0.9% per year. He noted COVID-19 made this decline even worse as AES Indiana experienced a sharp decline in commercial sales due to COVID-19. Eric noted one of the primary drivers causing commercial customer sales to decline is commercial customers' high participation rate in EE programs. Eric then described AES Indiana's industrial customer trends. He stated AES Indiana is experiencing a decline in the number of industrial customers (1.6% per year) as well as total sales (2.5% per year). Eric stated this is common amongst the energy industry and a large reason for the decline in sales is likely due to increasing energy efficiency amongst industrial customers. Eric identified AES Indiana's largest customers by the number of employees and noted the 10 largest customers by sales accounted for approximately 14% of sales.

Stakeholder Morgan Mickelson, a representative of the City of Indianapolis, asked AES Indiana to provide more information regarding AES Indiana's largest customers. Morgan Mickelson stated it seems the City of Indianapolis would qualify as a significantly large customer, despite not being on the list of largest employers in the city. AES Indiana responded the City of Indianapolis is among AES Indiana's top 10 customers by use, and the list of AES Indiana's top 20 customers by use is available on FERC Form 566. AES Indiana committed to posting a copy of this form to the IRP website.

Eric Fox stated one of the most significant changes driving AES Indiana's reduction in energy sales is the conversion of streetlights to LED technology. Eric Fox asked Erik Miller to discuss this further. Erik Miller detailed AES Indiana's street light conversion program began between the City of Indianapolis and AES Indiana and subsequently expanded into Beech Grove and Speedway. Erik stated since AES Indiana's LED conversion program began, energy use is down over 67%. Erik stated the program will continue into 2025.

Eric Fox then described why average use is declining by addressing the issue bottom up by identifying end-uses and energy demand for those end-uses. He stated efficiencies in these end-uses are driving overall energy demand down in both the residential and commercial sectors. He provided an example that the increasing use of data centers for commercial computing applications is causing demand to shift to areas with commercial data centers, such as northern Virginia, Dallas, or Chicago.

Moderator Stewart Ramsay asked Eric Fox if the increasing corporate adoption of cloud computing was driving these load shifts to service areas with commercial data centers. Eric responded by stating yes and provided an example that Itron is working with Dominion Energy, and Dominion Energy is anticipating an increase of between 300 MW and 400 MW of load due to data center load demand growth.

Eric Fox then described the impacts of AES Indiana's EE programs on sales. Eric stated residential customers experienced an 8% reduction in use over the past ten years while commercial customers experienced a 13% reduction in use over the same period due to AES Indiana's EE programs.

Modeling Approach

Eric Fox, Director, Forecasting Solutions, Itron
Michael Russo, Forecast Consultant, Itron
(Slides 56 – 66)

Eric Fox began the discussion of the modeling approach by explaining Itron completes its forecasts using a bottom-up approach where they estimate the rate class level of sales using statistical models with various inputs, such as economic drivers, for each rate class. He explained Itron uses data from the US Energy Information Administration's ("EIA") Annual Energy Outlook ("AEO") as well as weather data in developing its end-use profiles. Eric also described Itron assumes any additional efficiency benefits as supply-side resources for future use by AES Indiana. Eric stated from these end-use models, Itron then identifies aggregate estimates of long-term heating, cooling, and baseload information is combined with system peak and peak producing weather conditions to develop the system peak forecast.

Michael Russo introduced himself then previewed he would be discussing inputs to the lower-level class models. He began the discussion by detailing residential economic drivers and stated the two main drivers are population and household income. He stated Itron is using data from Marion County for population and an economic forecast from Moody Analytics. He explained population is the main driver in the residential customer model and household income influence the average use model. He explained there are two growth rates for both factors, historical (2010 – 2019) and forecasted (2022 – 2040), and the forecasted growth

rates are slightly less than the historical growth rates for both metrics. Eric Fox asked Michael why there was a drop in Marion County household income around 2022, as shown in the chart on Slide 58. Michael explained the increase then decrease in household income is due to residents receiving federal stimulus related to COVID-19 in 2020 and 2021 and the drop in 2022 and 2023 is the result of those stimulus plans terminating. Michael then explained the drivers for C&I customers are the non-manufacturing gross regional product and non-manufacturing employment population for the Indianapolis metropolitan statistical area, which utilized two growth rates for historical periods and forecasting periods with the same timeframes as the residential factor growth rates.

Stakeholder Anna Sommer asked Itron if Moody's is the vendor supplying the economic forecast data, and if so, which case Itron is using. Michael Russo confirmed the forecast was supplied by Moody's and stated it was Moody's baseline projection, which Eric Fox confirmed.

Michael Russo next explained an input for the class models is end-use intensity. He began this discussion by providing an overview of residential end-use intensity related to heating, cooling, and base loads. He explained Itron starts with the EIA's AEO for the east north central census division, which is the region AES Indiana's service territory is located, then calibrates that information with the MPS GDS created for certain items, such as water heating and air conditioning type. He explained residential energy use for heating is declining by 0.6% per year, cooling is declining by 0.1% per year, and base load is essentially flat, or increasing at 0.1% per year. Michael then explained the same end-use heating, cooling, and base metrics for commercial customers. Michael stated Itron uses EIA's AEO as a starting point again for this information and calibrates the data with GDS's MPS. He stated commercial energy use for heating is expected to decrease by roughly 1.8% per year, cooling is expected to decrease by roughly 0.1% per year, and base load is expected to decrease by 0.7% per year. He explained a large reason for commercial base load decrease is increasing energy savings due to LED conversions and improvements in ventilation for commercial customers in the future.

Michael Russo then discussed temperature trends, which he identified as a common area of concern for many utilities' IRPs. He noted the maximum temperature over a 20- or 30-year period is relatively flat, while average temperature and minimum temperature values are increasing over the same period at a rate of roughly 0.5 and 1.1 degrees Fahrenheit per year, respectively. Eric Fox added a lot of modeling is used for weather forecasts and the trends identified seem to be consistent across all geographical locations. He elaborated weather forecast models consider four relative concentration paths with different assumptions of increasing greenhouse gases, which tend to predict even greater temperature increases in the future.

Michael Russo then explained the impact of increasing temperatures on heating and cooling degree days. He stated cooling degree days are expected to increase in the future while heating degree days are expected to decrease, which will largely offset each other in terms of overall energy demand. However, he noted the increase in temperatures will likely cause greater summer peaks, as more energy will be required for cooling, which is expected to increase summer peak load by 0.1% per year and 82 MW by 2042.

Michael Russo next discussed the peak demand model. He explained the peak demand model will use the class-level models and estimate heating, cooling, and base load requirements and

add those requirements for the different classes to get aggregate heating, cooling, and base load requirements to develop the load requirements to identify a peak day load.

Shannon Anderson, a representative of Earth Charter Indiana, asked Itron if increased demand due to pumping stormwater from rainfall events is captured in the peak model and noted that could create new peaks in spring especially. Eric Fox explained increased demand due to pumping stormwater would only be captured to the extent that data was embedded in historical peak trends, which is not likely since the peak modeling is structured around the summer when hot weather usually drives the peak rather than pumping stormwater. Moderator Stewart Ramsay followed up by asking Eric Fox to clarify pumping stormwater is less likely to be a factor in the summer peak but is more likely to impact energy use. Eric agreed with Stewart's characterization and added pumping stormwater could potentially influence peaks in shoulder months. Stewart asked Eric to follow up on this and look into whether stormwater pumping loads could impact spring peaks, and Eric agreed.

Baseline Forecast

Eric Fox, Director, Forecasting Solutions, Itron
(Slides 67 – 69)

Eric Fox stated while the historical period identified sales growth as relatively flat, the baseline class sales forecast removes any reductions to sales due to EE program impacts because these will be modeled as supply resources in the forecast. Eric stated the baseline class sales forecast anticipates annual growth rates from 2022-42 of 1.0%, 0.4%, and 0.0% for the residential, commercial, and industrial classes, respectively. He then provided forecasts of overall energy and peak sales including and excluding DSM measures, which demonstrated demand for energy is expected to decrease by roughly 0.4% per year when including DSM measures while peak demand is expected to remain flat when including DSM. He stated when DSM is incorporated in the forecast, the forecast trend is consistent with historical data from the last 10 years.

Electric Vehicle (EV) and Solar PV Forecasts

Erik Miller, Manager, Resource Planning, AES Indiana
Jeffrey Huber, Overall Project Manager & MPS Lead, GDS Associates, Inc.
Jordan Janflone, EV Modeling/Forecasting Analyst, GDS Associates, Inc.
Patrick Burns, PV Modeling Lead & Regulatory/IRP Support, Brightline Group
(Slides 70 – 90)

Jeffrey Huber introduced himself and members of GDS. Jordan Janflone then introduced himself and stated he will discuss GDS's EV forecast, which aims to forecast the number of EVs and resulting EV energy use in AES Indiana's service territory. Jordan stated GDS has done extensive research on the various EV forecasts, which tend to predict a wide range of outcomes for EV adoption because it is a relatively new market. He reiterated the EV forecast is a two-step process: first, GDS estimates the total number of EVs, then GDS estimates the energy use by EVs. He explained there are various inputs to model the number of EVs expected, including: the number of residential customers, which used AES Indiana's load

forecast; the average number of vehicles per household, which used US Census data for the Indianapolis Metropolitan Area; the average vehicle life, which used data from the US Department of Transportation; the initial number of EVs, which used EV registration data from the Indiana Bureau of Motor Vehicles ; passenger car to light truck ratio, which used data from the EIA; EV sales as a percentage of total vehicle sales, which used multiple scenarios and studies; the average kWh per mile, which used data from the US Department of Energy; and the average miles driven per year by EV, which used data from Car & Driver's EV Owner Survey.

Jordan Janflone then provided a more detailed explanation for the inputs. The residential customer forecast used a steady growth rate. He detailed GDS considered three trend lines for EV sales: linear, exponential, and bass diffusion, but GDS ultimately decided to use a linear trend line because the EIA's AEO used a linear trend line. He then stated GDS identified three sales scenarios: low, which is similar to the current EIA AEO forecast and predicts 10% of new vehicle sales will be EVs; base, which aligns with a blend of Boston Consulting Group and Electric Power Research Institute's ("EPRI") medium forecasts and predicts 20% of new vehicle sales will be EVs; and high, which is similar to EPRI's high scenario and predicts 40% of new vehicle sales will be EVs. He explained the use of three scenarios with significant variance is reasonable because the EV market is relatively new.

Stakeholder Jamie Valentine, a representative of Butler University, asked if the EV sales projections identified on Slide 79 were only for individual ownership or if the model is also considering EV public transit and business fleet transitions. Jordan responded GDS's model currently only considers residential EV sales. Erik Miller added AES Indiana is currently evaluating incorporating fleet electrification. Moderator Stewart Ramsay asked if fleet electrification would be a separate piece of analysis layered onto the overall load forecast. Erik stated it would be a separate piece of analysis, and AES Indiana will provide additional information on fleet electrification in Public Advisory Meeting #2. Jordan added fleet adoption is an item to consider, but fleet adoption is currently even lower than residential adoption, and the fleet EV market is newer than the residential EV market.

Moderator Stewart Ramsay asked Jordan Janflone if GDS's model considers whether consumers will decide to transition from an EV back to a non-EV. Jordan explained GDS is not looking at behavior on an individual level; rather, it is estimating the percent of new vehicles sales trend with standard replacement rates and average lives of vehicles. Jordan explained the model assumes if an individual previously purchased an EV, the individual would be just as likely to purchase a new EV as any other individual.

Jordan Janflone then described the second component of the EV forecast, EV energy use, in greater detail. He explained the inputs for the EV energy forecast are the total number of EV units, average kWh per mile, and the total number of miles per year per EV. He explained the model will use the three trend scenarios previously identified: low, base, and high. He stated the number of vehicles in 2021 was a constant input obtained from the Indiana Bureau of Motor Vehicles, while the percentage of EV sales in 2030 and 2040 differed based on the trend scenario. Jordan then explained the EV energy forecast. He noted the base and high trend scenarios experienced compound growth over the forecasted period because of the larger miles driven per year, while the low case scenario's growth was similar to linear growth. He identified the high trend scenario has larger adoption rates and miles driven per year than the

other scenarios, which assumes as EV driving ranges increase, range anxiety decreases, and adoption increases, individuals will drive more miles on average, and are more likely to take longer trips or commute longer distances with their EVs. He stated GDS believes each scenario is equally likely to occur.

Stakeholder Ray Wilson asked how longer commutes would impact EV-related load in Marion County ("How do longer commutes have much to do within Marion County?"). Jordan Janflone responded 80% of charging occurs at home even when individuals drive EVs more and for longer distances. Jordan explained while individuals may take longer trips and commute longer distances, they will still likely charge their vehicles at home; therefore, longer commutes for individuals who live in Marion County will impact Marion County EV-related load.

Erik Miller then described how AES Indiana will use GDS's annual EV forecast to develop hourly load shapes for all 8,760 hours in a year to be used in the EnCompass model. He explained there are two categories of EV customer load shapes, managed and non-managed. He stated Guidehouse provides the non-managed charging vehicle load shapes, which uses a blend of utility EV metering programs in synthetic datasets from the US National Labs. Managed vehicle load shapes are obtained from data from AMI meters of AES Indiana customers who participate in AES Indiana's EVX rate, which is a managed EV charging rate.

Stakeholder Caleb Loveman, a representative of the Indiana Office of the Utility Consumer Counselor, asked AES Indiana, regarding the EV load shapes, what percentage of total charging will be managed charging? Erik Miller stated based on current 2021 levels, 16% are managed and 84% are non-managed. Erik elaborated the breakdown will move to 70% managed and 30% non-managed in 2042 using a linear trend. Erik stated to achieve this increase in managed participation, AES Indiana is modeling the additions of peak time and EV demand response incentives in addition to the current Rate EVX offering. Moderator Stewart Ramsay asked Erik to clarify the goal of managed charging is to ensure EV charging is not exacerbating existing peaks or creating new peaks. Erik responded Stewart's assertion was correct, and elaborated the situation is more nuanced due to COVID-19 with many individuals working from home, but previous modeling demonstrated without managed programs, many people would get home from work and start charging their vehicles, which would set a new peak or add to the existing peak. Erik stated the idea is to shift the charging to later hours in the evening when AES Indiana's system is not at peak load.

Patrick Burns introduced himself and specified the PV forecast being discussed today is a business-as-usual forecast. He explained the model will use a bass diffusion forecast because NREL established the use of a bass diffusion model for PV forecasts as an industry standard. He explained the model will consider the existing market share, maximum market share, and coefficients of innovation and imitation.

Patrick Burns then described the parameters in the bass diffusion curve that are being used for the business-as-usual case. He stated existing market share is obtained through AES Indiana 2021 Q3 cumulative net metering data, which included 625 existing residential systems and 46 existing non-residential systems. He stated factors that established the maximum market share were AES Indiana's customer forecast and the PV technical constraint factor of 48% for residential customers and 79% for non-residential customers, which is based on NREL's National Solar Radiation Database ("NSRDB") that accounts for constraints such as shading,

contiguous roof area, panel orientation, etc. He then described factors of innovation and imitation are sourced from NREL's dGen model but are adapted to better fit AES Indiana's operating characteristics by incorporating state-level EIA DGPV interconnection and Census data.

Patrick Burns then stated Brightline's use of three business-as-usual scenarios are considered for both residential and non-residential classes: high, medium, and low. He described the scenarios are currently estimated using a compound annual growth rate of historically installed systems within AES Indiana's service territory as well as the "willingness to participate" ("WTP") surveys data from GDS and Brightline surveys of customers in Indiana and the Midwest. He then detailed Brightline will conduct a survey specific to AES Indiana and if the survey produces significantly different results, then Brightline will update the adoption rates as needed. He stated the residential adoption rates for the high, medium, and low adoption scenarios were 29%, 15%, and 6%, respectively, and the adoption rates for non-residential customers for the high, medium, and low adoption scenarios were 35%, 19%, and 7%, respectively.

Patrick Burns next provided model forecast results for the business-as-usual case for residential customers in terms of number of systems and energy output in MWhdc, which produced similar results for all scenarios for the first 10 years, but after 10 years, the scenarios begin to significantly diverge. He then explained the results for the non-residential customers across the scenarios. He showed the scenarios significantly diverged from each other after around 15 years. He then explained while residential customers were expected to have a significantly larger number of premises, the energy output from non-residential customers is expected to be significantly larger.

Stakeholder Dale Thomas, a staff member of the IURC, asked if the IRP forecast on Slide 69 includes the base EV energy from Slide 81 and the base residential generation from PVs from Slide 87 as well as the base non-residential PV generation from Slide 89, and if the net impact is the difference between the solid and dashed blue lines on Slide 69. Erik Miller stated Dale was correct, as the EV forecast adds to load and the PV forecast subtracts from load to produce the net impact that is not very large due to the similar magnitudes of the additions and subtractions to load.

Stakeholder Ray Wilson added a comment in the written chat that stated, "Obviously if [n]et metering goes away in July 2022, there will be zero growth in residential solar." AES Indiana did not respond to this statement as it did not appear to be a question and Ray did not ask for a response.

Erik Miller then explained how the annual business-as-usual forecast will be incorporated into the EnCompass model by utilizing hourly PV load shapes. He stated AES Indiana is using data from residential customers AMI meters for both ground-based and rooftop-based solar installations.

DSM Market Potential Study Introduction

Erik Miller, Manager, Resource Planning, AES Indiana
Jeffrey Huber, Overall Project Manager & MPS Lead, GDS Associates, Inc.
(Slides 91 – 96)

Erik Miller provided an overview of the MPS and DSM process in the IRP. He specified AES Indiana does not currently have MPS results; rather, the discussion was an overview of the MPS process, which AES Indiana and its partners are currently completing. He explained the process starts by considering the entire universe of EE measures and demand response resources ("DRR") and then narrows the selection down to economic and achievable options within AES Indiana's service territory. He stated achievable amount is then put into "bundles" of DSM that appear to be resources in the planning model, which get selected alongside other supply side resources as a potential method of serving load or reducing load. He explained the bundles are then put into the IRP planning model, and any selections go into an RFP for vendors for implementation within three years. Then, once all the proposals are submitted, AES Indiana selects a vendor or vendors to implement the programs. After filing with the IURC, if the plan is approved, AES Indiana's vendor(s) implement the programs.

Jeffrey Huber then provided background on the MPS, which he described as an analysis and roadmap of the energy saving in the service area that is currently cost effective and what could become cost effective in the future. He explained the MPS is the first case to identify the market's remaining potential, then that data is used to create inputs for DSM into the IRP, which ultimately informs the future action plans or EE plans of AES Indiana.

Market Research

Jeffrey Huber, Overall Project Manager & MPS Lead, GDS Associates, Inc.
(Slides 97 – 102)

Jeffrey Huber explained the first component of the MPS is to conduct primary and secondary market research. He identified two prongs of the market research activities: (1) research to improve upon inputs typically used in both the load forecast and MPS and (2) research to help understand motivations and barriers to adoption. He explained research to improve inputs is used to understand the market, the residential and non-residential customer segments, and the types of equipment in each segment, which is useful in the MPS, load forecast, and to inform the end-use analysis. He elaborated the research GDS is completing for the MPS helped inform and tailor inputs of the load forecasts. He explained this process would normally include customer site visits; however, COVID-19 has made that impractical, so GDS is relying on web-based surveys. He stated GDS is confident they will be able to collect the data needed through this survey method. He then explained GDS also completes secondary research and builds energy simulation models to supplement its survey, and the research helps GDS understand market shares and the behavior of different energy using equipment to tailor unit energy consumption in the residential and small C&I classes. Jeffrey then explained the purpose of the second prong of the MPS is to understand customer perceptions and attitudes towards potentially purchasing and installing energy efficient equipment in the future to help inform adoption rates. He stated GDS not only considers financial incentives the utility offers

but also attempts to understand non-financial barriers and motivations that customers consider when deciding to ultimately purchase and install equipment.

Jeffrey Huber then provided an overview of the residential baseline survey statistics and noted work on the commercial survey is ongoing but should finish shortly. He stated GDS attempts to reach industry standard levels of confidence, which are 95% overall and 90% for subsegments. He stated in order to get the adequate level of confidence, 384 total residential customers are needed to reply, 68 multifamily residential customers are needed to reply, and 316 residential customers with single family homes are needed to reply. He stated the number of responses and precision surpassed the requirements for the total residential class as well as both subsegments. He then provided an overview of the questions the survey addressed, which included ownership, age, and count of electric end-use appliances as well as information on smart appliances and EVs. He stated GDS also noticed the number of customers with separate freezers significantly increased due to COVID-19 and the resulting food-shortage scare. He described the questions the survey addressed for non-residential customers, which include lighting, cooling, heating, ventilation, water heating, refrigeration, key equipment penetration, and limited efficiency saturation characteristics.

Jeffrey next discussed the WTP survey sample size by end-uses across EE, DR, and DERs. He noted asking every participant every question would increase the length of the survey and decrease the response rate, so GDS broke the survey into different modules and included a combination of around three modules in each survey. He stated GDS received an adequate number of responses to each residential model to satisfy the confidence requirements. He further elaborated on the types of questions the WTP addressed, including information related to HVAC systems, their likelihood to purchase efficient equipment, water heating, building shell, and other items.

Energy Efficiency (EE) Potential

Jeffrey Huber, Overall Project Manager & MPS Lead, GDS Associates, Inc.
(Slides 103 – 111)

Jeffrey Huber explained the overall market potential study process starts by developing a load forecast, understanding the load forecast, and segmenting it into segment types and desired end-uses for the MPS. He explained market research data detailing the measures' costs, savings, and useful life of the equipment are used to analyze the cost effectiveness of the measures into the future. He stated the modeling process then takes all that data and estimates the technical, economic, and achievable potentials. He then discussed several home/building/industry types across the residential, commercial, and industrial segments and accompanying end-uses for each segment. He stated GDS considers sensitivity around including industrial customers that opt-out in future programs as well as any correlations between opt-out statuses of DR and EE programs.

Jeffrey then described GDS is considering several hundred EE measures and the assumptions for each measure, including savings, incremental/full costs, integration, life, and applicability of the measures. He stated GDS leverages regional technical resource manuals ("TRM") TRMs for algorithms or deemed savings to develop these assumptions and stated GDS used Illinois's

TRM for algorithms because it gets updated annually. He stated GDS will supplement Illinois's TRM information with AES Indiana specific factors. He stated GDS works with AES Indiana, stakeholders, and the oversight board to review the measure list and determine the appropriate quantity and savings of measures. He welcomed stakeholder review and recognized the stakeholder review process as an opportunity to continue to improve the model.

Jeffrey Huber noted while GDS attempts to incorporate emerging technologies, they also try to limit the inclusion of emerging technologies in their model to only include technologies that have been quantified and studied to ensure technologies that have unknown futures are not included in the model. He explained GDS developed a definition of what it considers an emerging technology, which can be found on Slide 107, and noted GDS requires some documented estimate of savings and costs for inclusion. He then discussed the different types of EE potential, which are technical potential, economic potential, and achievable potential. He explained technical potential evaluates converting any items that are not currently efficient to the efficient option while evaluating certain practical considerations, such as space. He explained economic potential is a subset of technical potential and evaluates whether measures that are included in the technical potential are cost effective using the utility cost test, which evaluates the benefits, avoided costs of saving energy, and the incentive level that is offered.

He stated there are other economic cost tests, such as the total resource cost test, which evaluates cost using a broader range of benefits and costs. However, he noted the dominant economic test in Indiana is the utility cost test, which is why GDS is using that test for AES Indiana's 2022 IRP. He stated achievable potential is a subset of both technical and economic potential. He elaborated achievable potential also considers real-world barriers and the likelihood that individuals purchase and install equipment. He explained GDS considers both financial and non-financial incentives when evaluating achievable potential.

Jeffrey Huber then explained the equations that are used to calculate technical potential for residential and non-residential efficiency measures, which can be found on Slide 109. He explained the residential technical potential calculation utilizes a "bottom-up" approach that starts by taking the total number of households, evaluates the saturation of homes that have a particular piece of equipment as well as the saturation of homes remaining that are not already energy efficient, applies an applicability factor to consider whether factors exist that limit the use of the equipment, then applies a per unit savings factor to calculate the overall technical potential. He stated the non-residential model is different as it uses a "top-down" approach and calculates technical potential using an equation by first evaluating the starting number of sales in the commercial sector by building type, evaluating end-use, evaluating end-use by share of end-use sales applicable to the measure type, and applying a savings factor.

Jeffrey Huber then discussed economic potential in greater detail. He explained the economic potential evaluates the overall technical potential while removing any measures that are not cost effective. He noted GDS measures cost effectiveness over time, so while a measure might not be cost effective in earlier periods of the forecast duration, those measures will still be evaluated for cost effectiveness in later periods of the forecast duration. He then discussed achievable potential in greater detail. He noted GDS will consider the maximum achievable potential, which allows incentives to cover all the costs associated with installing and using the equipment in question. He explained GDS will also evaluate a realistic achievable potential as

well, which will trend with traditional and current incentive levels to develop adoption levels. He then provided an example of long-term adoption rates by end-use and incentive level for HVACs that utilized data from GDS's WTP survey, which found maximum achievable potential is roughly 85% and decreases to as low as roughly 35% with no incentives. He explained these metrics are then modeled to calculate long-term adoption rates that will ultimately be used in the achievable potential.

Demand Response (DR) Potential

Jeffrey Huber, Overall Project Manager & MPS Lead, GDS Associates, Inc.
(Slides 112 – 115)

Jeffrey Huber explained DR program evaluation follows similar methodologies as EE program evaluation. He contrasted DR program evaluation to EE program evaluation by stating there are smaller items to consider in DR program evaluation, such as the ability to control load by cycling equipment on and off as well as incentive programs like demand rate programs. He also contrasted EE programs and DR programs by explaining EE programs are used to reduce load at all times during the year while DR programs are targeted to reduce load during key periods, such as peak periods.

He stated while there are separate models for DR and EE programs, DR programs will similarly rely on avoided cost data, line losses, and discount rates. He stated participation rates for DR programs will also be used to simulate attainable load reduction rates, which uses similar WTP surveys to inform those rates for both load control and demand rate. He explained DR program evaluation also considers current data on estimated peak reduction per year based on the type of program as well as industry research to capture industry trends.

Jeffrey Huber then provided two demand response equations that distinguish whether the model user chooses to base estimated potential demand reduction as a percent of total per participant critical peak load or on a per customer critical peak load reduction value. Jeffrey then explained this was an overview of the model and GDS will provide the results of the modeling in Public Advisory Meeting #2.

Final Q&A and Next Steps

Erik Miller, Manager, Resource Planning, AES Indiana
(Slides 115 – 116)

Erik Miller thanked the stakeholders for their participation in Public Advisory Meeting #1 and expressed his appreciation for the discussion and questions stakeholders provided. He reiterated the date for Public Advisory Meeting #2 has not yet been finalized, but AES Indiana anticipates it will take place at some point in March or April. He stated AES Indiana expects to discuss assumptions for modeling as well as potentially release the results of the DSM models in order to facilitate discussion around DSM bundles. He also stated AES Indiana is evaluating discussing replacement resource costs in Public Advisory Meeting #2, specifically around costs for solar and wind replacement resources that are inputs in the modeling. He stated at that point, AES Indiana may be able to start evaluating existing resource costs and other related items.

Stakeholder Joey Myles asked AES Indiana to discuss its release of granular consumption data, as he stated he used to be able to access consumption data in 15-minute increments with more significant figures, but now he can only access daily consumption data with fewer significant figures. Brandi Davis-Handy replied AES Indiana is launching a new platform called Clean Energy Navigator for C&I customers within the next few weeks. Brandi stated AES Indiana will follow up with him and provide that additional information to all stakeholders in Public Advisory Meeting #2.

Erik Miller again thanked all stakeholders for their participation and stated he looked forward to continued discussion in Public Advisory Meeting #2.