

EMCC Comments on Staff Director's Draft Report re DEI 2021 IRP

On December 2, 2022, Dr. Bradley Borum, the Commission's Director of Research, Policy, and Planning, filed with the Indiana Utility Regulatory Commission (IURC) his Draft Report on the Duke Energy Indiana (DEI) 2021 Integrated Resource Plan (IRP) filed with the IURC on December 15, 2021. In his Draft Report, Dr. Borum summarized the DEI IRP and the Comments on the DEI IRP previously filed with the IURC by organizations participating in the Stakeholder Engagement Process for the DEI IRP, namely Sierra Club, Reliable Energy, DEI Industrial Group (IG), Energy Matters Community Coalition (EMCC), Hoosier Environmental Council (HEC), Office of Utility Consumer Counselor (OUCC), the Indiana Conference of the NAACP (NAACP), Indiana Advanced Energy Economy (AEE), and (jointly) Citizens Action Coalition, Earth Justice and Vote Solar (CAC et al). See <https://www.in.gov/iurc/energy-division/electricity-industry/integrated-resource-plans/> (Duke Energy Indiana). Dr. Borum also offered his own Comments on the various aspects of the DEI IRP and well as his Responses to the various Comments filed by the above-named Stakeholders.

Pursuant to Commission General Counsel's December 5, 2022 e-mail, Energy Matters Community Coalition, Inc. (EMCC), with the technical assistance of its independent consultant Synapse Energy Economics, Inc. (Synapse), offer the following comments on Dr. Borum's Director's Draft Report due on or before Friday, January 6, 2023.

1. Dr. Borum's Summary of and Response to the EMCC Comments

Dr. Borum reported as follows regarding the EMCC Comments on the 2021 DEI IRP:

EMCC submitted a report prepared by Synapse Energy Economics, Inc. (Synapse) titled "Deep Decarbonization and Rapid Electrification of the Duke Energy Indiana Service Territory." EMCC commends the Synapse report to the Commission and the Company.

EMCC offers the following highlights for special consideration:

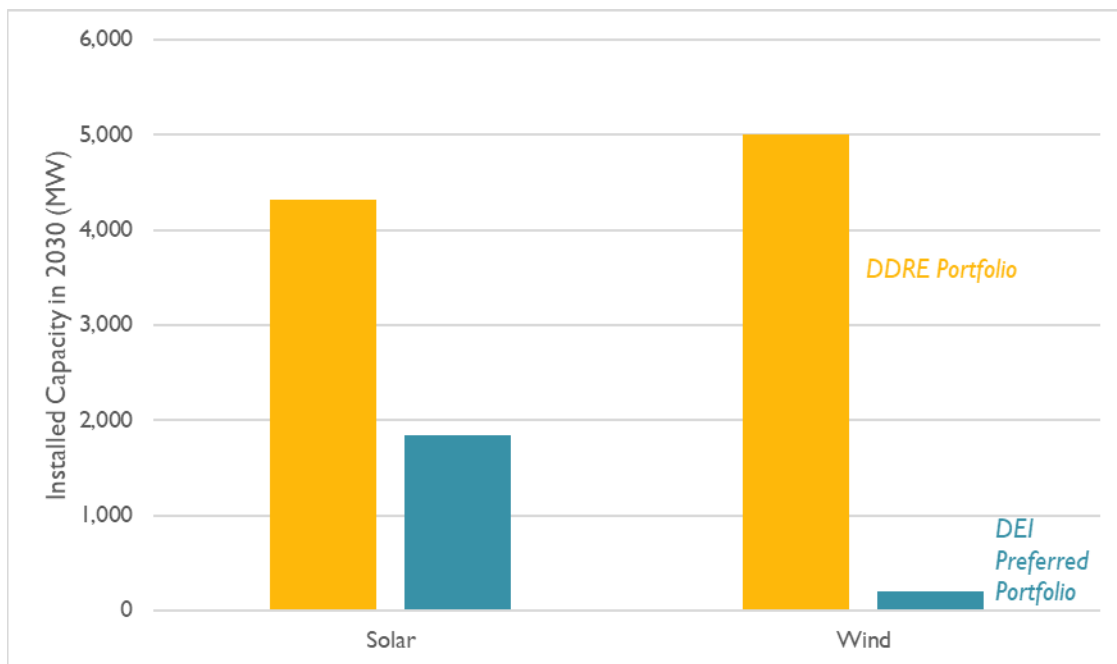
1. The clearest pathway to achieving the IPCC recommendations for the rapid reductions in carbon emissions (in shorthand, "Net Zero" by 2050) required to avoid the direst consequences of climate change necessarily entails "deep decarbonization" of the power sector in conjunction with "rapid electrification" of the transportation, buildings and industrial sectors of the global economy.
2. The clearest pathway for DEI and its service territory economy to contribute their "fair share" to achieving the IPCC recommendation of "Net Zero" by 2050 globally is to achieve that goal locally for DEI and its service territory economy.
3. To achieve the carbon reduction goals required through electrification in the transportation, buildings, and industrial sectors of the DEI service territory economy by 2050, it is essential for the power sector of that economy (including principally but not exclusively DEI) to decarbonize even more rapidly than the rest of that economy.
4. The most cost effective way for the power sector of the DEI service territory economy to decarbonize as rapidly as required for that entire economy to reach "Net Zero" by 2050 is most likely through rapid deployment of (a) wind and solar generating resources in

combination with storage resources (both long and short duration) at utility scale, (b) solar generating resources in combination with storage at distributed scale, and (c) end-use efficiency in all sectors of the DEI service territory economy (including especially but not exclusively the transportation, buildings and industrial sectors).

EMCC thinks DEI should submit a Deep Decarbonization and Rapid Electrification (DDRE) scenario and optimized portfolio in DEI's next IRP submittal.

Director's Response: The Director concurs that a broad range of scenarios should be evaluated in the integrated resource planning process. A DDRE scenario, or something similar, is a possible future that should be analyzed to better understand potential implications of near-term resource choices.

Dr. Borum's summary of the EMCC Comments is accurate. Moreover, Dr. Borum's conclusion that a DDRE Scenario "should be analyzed to better understand potential implications of near-term resource choices" by DEI is fundamental to the Commission's entire Integrated Resource Planning paradigm for its regulated electric utilities. With respect to DEI, Synapse's analysis demonstrates that a DDRE scenario would have significant implications for near-term resource procurement. For instance, Synapse's analysis of the levels of wind and solar generating resources required to be installed by 2030 in a DDRE Scenario differs dramatically from the Preferred Portfolio recommended by DEI in its 2021 IRP, as shown in this chart:



Thus, it would be imprudent for the Commission to rely on the 2021 IRP, which fails to include or consider the resource implications of a DDRE scenario, to support DEI's near-term resource choices.

Accordingly, it is EMCC's view that the Commission should not allow DEI to use its 2021 IRP to support its near-term resource choices without having included a DDRE scenario and accompanying optimized portfolio "to better understand potential implications" of those near-term resource choices.

2. **DEI is presently updating its 2021 IRP and supporting analyses to address significantly changed circumstances since December 15, 2021, but is doing so without including a DDRE scenario and accompanying optimized portfolio in its IRP update, even though such a scenario and portfolio would be especially relevant to DEI's near-term resource choices given the changed circumstances necessitating the IRP Update.**

On September 19, 2022, EMCC and Synapse were advised by Charles River Associates (CRA) via e-mail as follows:

Please hold the date of October 11, 2022, 1-5pm (Eastern), for an information sharing session on the updates to Duke Energy Indiana's IRP. A calendar invite will follow.

Since Duke Energy Indiana submitted the IRP in 2021, it has conducted a request for proposals for intermittent and non-intermittent resources using Charles River Associates as an independent third party evaluator. Duke Energy Indiana is updating its resource analysis to include those inputs, as well as other inputs. Duke Energy Indiana will not be submitting a new IRP or undergoing an IRP stakeholder process this year, but we will be providing information sharing sessions. The updated analysis will be used to support future filings at the IURC for certificates of public convenience and necessity for new resources. The Company plans to hold two or three sessions in Quarter 4, 2022.

CRA, Duke Energy Indiana RFP Information Sharing Session 1 (9/19/2022 2:39:06 PM US EST).

Subsequently, EMCC and Synapse were advised by CRA via e-mail:

The previously communicated date of October 11 has been revised.

Please hold the date of October 21, 2022, 9am-12:30pm (Eastern), for an information sharing session on the updates to Duke Energy Indiana's IRP. A calendar invite will follow.

CRA, Duke Energy Indiana RFP Information Sharing Session 1 - Revised Date (9/23/2022 9:17:05 PM US EST).

More or less concurrently, DEI established a new section on its website for its CRA-facilitated information sharing sessions. As explained on this website:

Coming out of the 2021 Integrated Resource Plan (IRP), Duke Energy Indiana (DEI) is undertaking an all-sources Request for Proposals ("RFP") process. During Q1 2022, DEI released two separate but related solicitations that considers both Intermittent (renewables) and Non-Intermittent (thermal and stand-alone storage) resources. The process has been designed to secure generation capacity resources outlined in its preferred portfolio developed as part of the 2021 IRP.

DEI engaged an independent third-party administrator, Charles River Associates (CRA), to

facilitate the RFP process and ensure it is conducted in a fair and unbiased manner. Proposals for intermittent generation were due in mid-April and for proposals for non-intermittent generation in early May. CRA independently evaluated the proposals and submitted the results to DEI in July.

Stakeholder Engagement

As a part of the RFP bids evaluation process, DEI will be conducting several Stakeholder Informational Sessions throughout Q4 2022. DEI intends to share with Stakeholders key evaluation inputs that will be used to evaluate RFP bids and resource mix.

DEI, 2022 RFP & CPCN Process, <https://www.duke-energy.com/home/products/in-2021-irp-stakeholder/2022-rfp-and-cpcn-process> (last visited 12/31/22).

Most notably, DEI also significantly expanded the scope of its planned information sharing sessions as well as the role of CRA to include updates to its 2021 IRP for inputs from multiple sources in addition to its RFP bids evaluation process:

Due to changes since the 2021 IRP submittal, most notably MISO's seasonal accreditation construct and the Inflation Reduction Act, among others, DEI will be providing an updated IRP analysis as part of upcoming Certificate of Public Convenience and Necessity (CPCN) filings.

Due to the many changes to key IRP inputs, DEI has also engaged CRA specifically for this process to ensure all inputs and updates have been made reasonably and without biases.

Id.

Indeed, in the presentation which Duke Energy made at its November 4, 2022 Third Quarter 2022 Earnings Call for investors and investment analysts, Duke expressly characterized the product of the expanded DEI inclusion of additional inputs and analyses into the information sharing process as an "updated IRP" which would be completed "by year-end [2022]." More specifically, Duke formally advised its investors and investment analysts: "[DEI] IRP will be updated for the CPCN filings to include results of the RFPs, changing fuel and commodity costs, the impacts of the Inflation Reduction Act, and new generation planning requirements under MISO." (Emphasis added.) Duke Energy, Earnings Review and Business Update – Q3 2022, at 20, https://investors.duke-energy.com/events-and-presentations/default.aspx?gl=1*1bw3d41*qa*MTQ2NDQxOTk1LjE2NzI0OTIxMjE.*qaHB58MJRNTY*MTY3MjUwMTQ4My4yLjEuMTY3MjUwMTQ4NS4wLjAuMA..&qa=2.214798165.398831074.1672492122-146441995.1672492121 (last visited 12/31/22).

The most crucial results of DEI's "updated IRP" are not yet known to EMCC and other stakeholders because DEI did not meet its own goal of completing all three of its planned information sharing sessions before year-end 2022. Instead, DEI completed only two of its planned information sharing sessions by year-end 2022. For the details of those two sessions, see the following:

- **Information Sharing Session No. 1 (October 21, 2022) –**

Presentation: Introduction - Key Changes; RFP Results; Load forecasting; Commodity Prices; Technology Costs, <https://desitecore10prod-cd.azureedge.net/-/media/pdfs/our-company/dei-irp-information-sharing-session-1.pdf?rev=c684406d33cb4828ae510172fa8db83c> (last visited 1/3/2023); and

Stakeholder Q&A: <https://desitecore10prod-cd.azureedge.net/-/media/pdfs/our-company/dei-irp-2022-cpcn-information-sharing-session-1-qa.pdf?rev=18306eec34494a8d88e89be8fae4b5bf> (last visited 1/3/2023)

- **Information Sharing Session No. 2 (December 1, 2022) –**

Presentation: Market Changes in MISO; Power Prices; Initial Modeling Outcomes, <https://desitecore10prod-cd.azureedge.net/-/media/pdfs/for-your-home/dei-irp-2021/dei-info-sesesion-miso-changes.pdf?rev=5b5929559cdd41a989d6c834c1fcecfd> (last visited 1/3/2023); and

Stakeholder Q&A: <https://desitecore10prod-cd.azureedge.net/-/media/pdfs/our-company/dei-irp-2022-cpcn-information-sharing-session-2-qa.pdf?rev=52654a45940241829482b2edc9e8caf0> (last visited 1/3/2023)

DEI advised stakeholders via an e-mail from CRA on December 28, 2022 that Information Sharing Session No. 3 would not be held until January 27, 2023. CRA, Duke Energy Indiana RFP Information Sharing Session 3, 12/28/2022 2:34:05 PM US EST. The stated topics to be addressed in this Session are Decision Criteria and Updated Preferred Portfolio. Stakeholder Engagement, Workshop 3, <https://www.duke-energy.com/home/products/in-2021-irp-stakeholder/2022-rfp-and-cpcn-process> (last visited 1/3/2023).

3. There simply can be no genuine dispute that the additional inputs and analyses which DEI is now including in the update of its IRP as filed December 15, 2021 are necessary – but also insufficient – for appropriately reviewing and evaluating the Company’s near-term resource options and choices in 2023.

A. Changing Fuel and Commodity Costs

“Changing” fuel and commodity costs is, in the current economic environment, a euphemism for “rising” or “increasing” fuel and commodity costs. The extent and duration of these increasing costs has historically had significant implications for the American and world economies as a whole, but especially energy and utility costs and prices. See, e.g., Edwin Bennion, Trevor Bergqvist, Kevin M. Camp, Joseph Kowal, & David Mead, Exploring price increases in 2021 and previous periods of inflation, Beyond the Numbers: Prices and Spending, vol. 11, no. 7 (U.S. Bureau of Labor Statistics, October 2022), <https://www.bls.gov/opub/btn/volume-11/exploring-price-increases-in-2021-and-previous-periods-of-inflation.htm> (last visited 12/31/22).

The current period of such “inflation” has been especially significant in its recent character and magnitude as well as its future uncertainty, comparable with the other periods of high inflation which the United States has experienced in the past half-century. Specifically:

Analyzing data from each BLS price survey reveals similar patterns of inflation throughout historical timeframes. During the mid-1970s, both the CPI and PPI indexes showed high rates of inflation. As prices for raw food advanced sharply on a 12-month basis in 1973, the producer side of the market faced substantial inflation. The producer price increases generated inflation in finished food prices for consumers later in the year. Then, higher oil prices drove both indexes upward through 1975. A few years later, in the late-1970s, oil prices once again drove increases in the CPI and PPI indexes. Chart 6 shows 12-month price increases across all the price indexes. As the chart shows, in 2007 and 2008, import prices experienced inflation the earliest. Finally, higher energy prices led inflation across all BLS indexes in 2021, with producer and export price advances outpacing those for import and consumer prices.

The 2021 trend of price increases persisted in early 2022. Global events contributed to continued increases in import, export, producer, and consumer prices as evidenced by BLS indexes. Renewed lockdowns in China amid further COVID-19 outbreaks factored into the price advances. Economic sanctions imposed in the first quarter of 2022 also impacted commodity prices worldwide. Given the importance of Russian energy exports, uncertainty surrounding the country’s invasion of Ukraine resulted in price advances for crude oil and natural gas. Wheat and corn, other substantial exports from the region, also recorded price increases in the first quarter of 2022. The resulting restrictions on production put more burden on global supply chains, impacting production of everything from automobiles to computer chips.

Data from 2021 and early 2022 indicate a global economy impacted by continued spillover effects from the COVID-19 pandemic, as well as new geopolitical issues. The ongoing strain on global supply chains translated to persistent upward price pressure across various goods and industries. Remaining to be seen is how persistent inflation will be as the economy continues to reopen and supply chain disruptions abate.

See id., at Chart 5 and accompanying text and notes.

More specific to the DEI IRP context, the comparative impacts of inflation generally and energy inflation particularly on alternative resources available to DEI in the near-term is obviously crucial to the analysis and conclusions incorporated in the “updated” IRP currently in process.

B. The Inflation Reduction Act and Other Recent Related Federal Legislation Define A New, “Game Changing” National Climate and Energy Policy

The historic level of “inflation” in the American and world economies in 2021-22 is, of course, the reason why the “Inflation Reduction Act” (IRA) was so named and enacted in the United States in August, 2022. However, even more significant for the purposes of the DEI IRP, the IRA has been widely recognized as a “game changer” insofar as American national climate change and energy policy is concerned. *See, e.g.*, PLG Consulting, Client Update: Inflation Reduction Act: A Game Changer for Energy, <https://plgconsulting.com/plg-presentation/client-update-inflation-reduction-act-a-game-changer-for-energy/> (last visited 12/31/22); Bain & Co., The Inflation Reduction Act Is A Decarbonization Game

Changer, <https://www.bain.com/insights/decarbonization-game-changer/> (last visited 12/31/22). In particular:

The Inflation Reduction Act is a game changer for the United States' participation in the new energy economy. By reducing the costs and risks of decarbonization, mostly through new tax incentives for clean energy investments, it changes the terms for private sector investment in American clean energy and manufacturing, and positions the US as a leader on commodities crucial to the global energy transition, including hydrogen and decarbonized power generation.

By clearly defining a wide range of incentives, the act creates certainty for decarbonization investments over the next 10 years, empowering companies to invest in new technology, equipment, and infrastructure with more confidence. It unleashes the private sector to drive a dramatic reduction of US greenhouse gas emissions, with projected reductions of up to 42% below 2005 levels by 2030 (see Figure 1).

The IRA introduces \$433 billion in new spending balanced against \$811 billion in new revenue, most of it from a 15% minimum corporate tax and reforms that will allow the government to negotiate prices of prescription drugs purchased through Medicare. About \$369 billion of that spending is targeted at addressing climate change or ensuring energy security; it is the United States' greatest investment to date in tackling climate change.

When combined with climate-related spending in 2021's Infrastructure Investment and Jobs Act and the more recent CHIPS and Science Act aimed at bolstering American semiconductor chip manufacturing capacity, US federal spending on clean energy, manufacturing, and infrastructure will nearly triple over the next decade (see Figure 2). **Together, these measures put the country on track to deliver as much as two-thirds of the work needed for the US to close the gap between current policies and its 2030 climate goals.** (Emphasis added).

Bain & Co., *supra* at 1.

Moreover, the enactment of the IRA, IJJA and Chips and Science Act reflect a major change in federal policy regarding climate change and the actions to be taken by the nation in addressing that monumental, global challenge. In particular, these legislative enactments reflect a policy of emphasizing the "carrot" rather the "stick" in mobilizing both the public and the private sectors of the national economy in a coordinated effort to employ financial incentives to utilities, state, local and tribal governments, non-profit organizations, private businesses, housing complexes and individual households implement a Deep Decarbonization, Rapid Electrification strategy of climate action.

Generally speaking, for instance:

The Inflation Reduction Act is the largest clean energy investment America has ever made, with strategic incentives to make the transition to clean energy and a decarbonized life easy and financially smart. Its home energy offerings include up-front discounts, tax credits and low-cost financing that together provide a substantial pot of money for every household to electrify the machines they rely on — the cars they drive, how they heat the air and water in their homes, cook their food, dry their clothes and get their power — regardless of income level.

Rewiring America, GO ELECTRIC: Rewiring America’s Digital Guide to the Inflation Reduction Act, <https://content.rewiringamerica.org/reports/Rewiring%20America%20Go%20Electric%20Digital%20Guide.pdf> (last visited 1/1/2023), at 4.

More specifically, with respect to individual households:

Switching to electric appliances: The IRA offers households up to \$14,000 in up-front discounts to switch over to electric appliances — covering up to 100 percent of project costs for low-income households and up to 50 percent of costs for moderate-income households. For remaining costs and for households who don’t qualify for the up-front discounts, the IRA includes major tax credits for electrification and energy efficiency upgrades. Low-cost financing — which will bring down the monthly, financed costs of electric machines — will also become widely available in the months ahead.

Purchasing electric vehicles: The IRA offers up to \$7,500 toward the purchase of a new electric vehicle and up to \$4,000 toward the purchase of a used electric vehicle. Starting in 2024, these incentives can be accessed as up-front discounts.

Installing rooftop solar and home storage: The IRA provides 30 percent off the cost of rooftop solar, home batteries and geothermal systems.

Making major investments in affordable housing and multifamily rental units. While it may not be consumer-facing, the IRA includes significant funding for rental housing to go electric, cut costs, and increase safety and resiliency.

Id., at 5.

C. MISO’s Very Real Generation Interconnection Planning, Construction, Congestion and Cost Constraints Must Be Considered in the Controlling Context of the Necessity and Urgency of Achieving Current National Climate and Energy Policy Goals.

In addition to establishing a new national climate and energy strategy, the IRA, IIJA and Chips and Science Act also place a particular focus and priority on achieving the nation’s 2030 interim climate and energy goals as time-critical prerequisites to accomplish its ultimate goals circa 2050 to avoid the most dire consequences of climate change. This focus has special relevance for utilities such as DEI which operate in the MISO footprint because, as a practical matter, actual interconnections of new DEI transmission-level, utility-scale generating resources in the near-term (e.g. through 2028) will likely be limited to a comparatively small percentage of those currently in the MISO Interconnection Queue.

While FERC recently approved modified MISO interconnection policies and procedures in order to expedite required transmission studies for interconnection applications, these new policies and procedures apply only to applications which “have not begun the final system impact study in DPP Phase III as of the effective date of the proposed Tariff revisions, i.e., March 15, 2022. “ See Order Accepting Tariff Revisions, Docket No. ER22-661-000, 178 FERC ¶ 61,141 (Issued March 14, 2022), https://cdn.misoenergy.org/2022-03-14_178%20FERC%20C2%B6%2061,141_Docket%20No.%20ER22-661-000623464.pdf (last visited 1-2-20-23), at ¶28. As a result, the time required to work off the huge

backlog of existing applications will likely entail that actual interconnections of the resources associated with applications expedited after March 15, 2022 will materially reduce the backlog before 2029.

For instance:

- The projected interconnection date of the generation project with the latest projected in-service date currently listed in the MISO Interconnection Queue for Indiana (Project J2407, a 198 MW Solar Project planned for interconnection to the DEI transmission system) currently shows a projected in-service date of October 1, 2027. See MISO Interactive Generation Interconnection Queue, https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/gi-interactive-queue/# (last visited 1/2/2023).
- The last project listed as having a completed Phase 3 Study (Project J1482, a 150 MW Solar Project planned for interconnection to the NIPSCO transmission system) currently shows a projected in-service date of 8/15/2022. See *id.* However, the Generation Interconnection Agreement was not executed until 9/23/2022 and it shows a projected in-service date of 5/1/2024. See Service Agreements Under the MISO Tariff – Interconnection Agreement, <https://cdn.misoenergy.org/NIPSCO-Twin%20Lakes%20Solar%20GIA%20J1482%20SA%203912%20Public626675.pdf>
- The last project listed as having a completed Phase 3 Study and planned for interconnection to the DEI transmission system (Project J1481, a 200 MW Solar Project) currently shows a projected in-service date of 8/15/2022. See MISO Interactive Generation Interconnection Queue, https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/gi-interactive-queue/# (last visited 1/2/2023). However, this project does not yet have an executed Generation Interconnection Agreement specifying an updated in-service date. See Service Agreements Under the MISO Tariff – Interconnection Agreement, <https://www.misoenergy.org/legal/service-agreements/#nt=%2Fagreementtype%3AInterconnection%20Agreement&t=500&p=0&s=&sd=> (last visited 1/2/2023).
- The last project listed for interconnection to the DEI transmission system for which a Phase 3 study has been completed and has an executed Generation Interconnection Agreement (J1378, the 200 MW Crossroads Solar Project being developed by Ranger Power) currently shows a projected in-service date of 11-15-2024. See Agreements Under the MISO Tariff – Interconnection Agreement, <https://cdn.misoenergy.org/Duke%20Energy%20Business-Crossroads%20Solar%20PGIA%20J1378%20SA%203922%20Public626954.pdf> (last visited 1/2/2023).
- The last projects listed for interconnection in Indiana for which Phase 3 studies have been completed were included in MISO’s DPP-2019 Study Cycle; none of the projects listed as having been included in the 2021 and 2022 Study Cycles are listed as having completed even Phase 1 studies (all of which are currently listed as having been included in the 2020 Study Cycle). See MISO Interactive Generation Interconnection Queue,

https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/gi-interactive-queue/# (last visited 1/2/2023).

- All of the 56 projects currently listed as included in MISO’s DPP-2021 and 2022 Study Cycles are characterized as “Study Not Started.” See *id.*
- There are 105 projects classified as having Active applications but which are not listed as included in any MISO Study Cycle or having any of the studies required for interconnection as having been started. See *id.*

Having been concerned and puzzled by these findings and their implications for DEI’s IRP Update when initially compiled and contemplated, EMCC made the following informal discovery request to and received the related response from DEI:

Q - How does the MISO interconnection queue and changes in it over time factor into the DEI resource planning framework?

A - DEI factored the size of the MISO interconnection queue when assessing feasibility of modeled new capacity additions. The queue currently stands at ~176GW of active wind and solar project combined, roughly double the incremental amount DEI modeling suggests will be installed in MISO by 2040, and over an order of magnitude more than would be installed in a single year. Moreover, the current queue largely represents the project development environment prior to IRA. The quantity and type of capacity in the queue will likely increase as the incentives offered by the IRA are fully factored into future project development plans. For example, DEI expects more wind in the queue in the near future bolstered by the seasonal capacity construct and the IRA incentives. Additionally, DEI used MISO queue data to estimate the transmission system impact associated with new resources used in the optimized portfolio modeling. Where RFP information was available, DEI applied specific transmission interconnection data to the portfolio optimization.

DEI (Beth Heneghan) E-mail, Re: Duke Energy Indiana RFP Information Sharing Session 2, 12/13/2022 3:58:05 PM US EST.

From EMCC’s perspective, the DEI response totally disregards the proverbial “elephants in the room” – even though those elephants have been “spotted” and “called out” by renewable energy developers and advocates since at least 2019. Succinctly described, these “elephants in the room” are:

- A volume of interconnection applications (the vast majority of which are solar, wind and storage) which is overwhelming the current institutional capacity of MISO to conduct timely from a commercial perspective the technical studies required prior to a Generation Interconnection Agreement among affected parties being negotiated, documented and executed;
- Even when the required studies have been conducted within a commercially reasonable time, the projected costs associated with sufficiently mitigating the transmission constraints

associated with a project interconnection and assigned to the project developer have often been too high to permit the project to move forward in the marketplace;

- Even when the projected costs associated with sufficiently mitigating the transmission constraints associated with a project interconnection have been commercially reasonable, other obstacles to timely completion of the project have often been commercially impracticable to overcome; and
- All too often it is not possible to anticipate in advance which Generation Interconnection Applications will founder on one or more of “elephants” 1, 2 and 3 above, so significant opportunity as well as financial costs can be incurred before projects are determined to be impracticable and therefore cancelled and their interconnection applications withdrawn.

See, e.g., Kelly Welf, MISO, SPP Identify Transmission Upgrades Enabling 28 GW of New Renewables, RENEWABLE ENERGY WORLD (Mar. 9, 2022), <https://www.renewableenergyworld.com/solar/miso-spp-transmission-study-reveals-28-gw-renewable-energy-potential/> (last visited 1/2/2023); Jeff St. John, Report: Renewables Are Suffering From Broken US Transmission Policy, GREENTECH MEDIA (Jan. 12, 2021); and Kari Lydersen, Grid Congestion A Growing Barrier for Wind, Solar Developers in MISO Territory, ENERGY NEWS NETWORK (Sep. 20, 2020), <https://energynews.us/2020/09/29/grid-congestion-a-growing-barrier-for-wind-solar-developers-in-miso-territory/> (last visited 1/2/2023). These “elephants in the room” simply cannot be ignored in the context of DEI’s Updated IRP. Instead, MISO’s very real generation interconnection planning, construction, congestion and cost constraints must be considered in the controlling context of the necessity and urgency of achieving current national climate and energy policy goals.

4. Including a DDRE scenario and accompanying optimized portfolio similar to those proposed by EMCC and Synapse in DEI’s ongoing IRP Update is an essential step prior to Commission consideration of the irretrievable resource commitments which will be proposed by DEI in its planned Certificate of Public Convenience and Necessity (CPCN) proceedings based on its IRP Update.

There are three characteristics which distinguish the DDRE scenario and accompanying optimized portfolio proposed by EMCC and Synapse from the scenarios and portfolios being proposed by DEI for its ongoing IRP Update:

- The DDRE scenario and optimized portfolio proceed on the “Deep Decarbonization” premise that a CO₂ emissions curve between 2023 and circa 2050 should be a binding constraint rather than one of multiple considerations in the modeled results for both the power sector and the economy as a whole in the DEI service territory; and
- The DDRE scenario and optimized portfolio proceed on the “Rapid Electrification” premise that the major sectors of the economy in addition to the power sector (i.e., buildings, transportation and industry) in the DEI service territory must be rapidly electrified with

“deeply decarbonized” power in order to satisfy a “binding constraint” CO2 emissions curve imposed on the modeled DEI service territory power sector and economy as a whole.

- The DDRE scenario and optimized portfolio proceed on the same basic national climate and energy policy premises of Deep Decarbonization and Rapid Electrification as the Inflation Reduction Act and thus provide the best conceptual framework to analyze and evaluate DEI’s near-term resource options between now and 2030 in the context of the Act.

There has been a veritable flood of publications, podcasts and webinars providing descriptions, analyses and commentaries regarding the Inflation Reduction Act since it became federal law in August 2022. EMCC has reviewed many but certainly not all of these sources. Of those reviewed regarding recent federal legislation, probably the most helpful to EMCC in understanding the national climate and energy policy framework underlying not only the Inflation Reduction Act but the preceding Infrastructure Investment and Jobs Act (aka Bipartisan Infrastructure Law) and the Chips and Science Act is the Ezra Klein podcast and related transcript of his interview of Jesse Jenkins, a key “behind-the-scenes” player in both the Capitol Hill negotiations which produced the IRA and the policy development and analysis which underlaid those negotiations.

As Ezra Klein prefaced this podcast:

I’m Ezra Klein. This is “The Ezra Klein Show.”

This is a long episode. It is a hefty pod. And it is worth it.

I’ve been wanting to do something like this for a long time. The backdrop here is very simple. Decarbonizing the economy, it is the — or at least one of — the central tasks of our era. A lot of how we think about politics and policy has to work backwards from decarbonization and that means really understanding the path between here and there — what we need to do, what industries we need to change, what we need to build, what people need to buy, which policies and technologies we have to throw at this problem and which we still don’t. The challenge of doing an episode like this is finding someone who has all of that in their head all at once and can communicate it.

But Jesse Jenkins can. Jenkins is an energy and climate expert at Princeton University. He was central to the Net-Zero America Project, which laid out some of the clearest and most detailed pathways to decarbonization. And then, he was really, really central to modeling the different versions of the climate bills to understand their effect on emissions and how it was changing as people added policies and took them out. And that made him a key source for almost everyone, the people inside the negotiating rooms, the people trying to cover what was happening in the negotiating rooms, everyone who is trying to understand what this legislation will do.

When we spoke, Jenkins was just back from the White House celebration marking the Inflation Reduction Act’s passage. And what I wanted to do with him was try to get a holistic look at both the decarbonization that is needed, and then how the bill will make it easier, and then how there are things that have not been solved by this bill. And I think we did that. Even as someone

who has covered climate policy for years, I learned a huge amount, doing the research here, and even more by having this conversation. And I hope you will too. . . .

The Single Best Guide to Decarbonization That I Have Heard: Ezra Klein Interviews Jesse Jenkins, <https://www.nytimes.com/2022/09/20/podcasts/transcript-ezra-klein-interviews-jesse-jenkins.html> (Transcript) (last visited 1/3/2023).

From the perspective of EMCC, the podcast of this interview and its related transcript should be reviewed in full -- and then reviewed in full again -- as well as subsequently referenced selectively thereafter. But, to provide the overall frame of the interview here, EMCC defers to Msrs. Klein and Jenkins in their own words:

Ezra Klein

. . . I want to begin the conversation here with what we're trying to achieve. You'll often hear this idea or this goal of net zero. Net-zero emissions — when, how? Talk me through what that actually means.

Jesse Jenkins

Yeah, net-zero emissions of all greenhouse gases, so all climate-warming pollutants. And that is basically the point where we stop digging a deeper hole. The first rule of holes is stop digging, right? Then you can figure out how to climb out. And until we reach the point where the total emissions of climate-warming gases from human activities is exactly equaled out or more so by the removal of those same greenhouse gases from the atmosphere each year due to human activities, we're basically contributing to the growing concentration of climate-warming gases in the atmosphere. And that's what drives climate change, those cumulative emissions and the total atmospheric concentrations of greenhouse gases. Carbon dioxide being the most important and most prominent, but also things like methane, nitrous oxides and several other climate-warming gases as well.

So when we say net-zero greenhouse gases, we mean all of those greenhouse gases. And so that the total contribution of human emissions is exactly equaled out by the total contribution of removals from the atmosphere and storage of CO₂ in either back in geologic storage, or in forests and agricultural lands and in the soils or in the oceans, things like that we can accelerate and increase due to human activities as well. So that's the goal for the world to reach. That's what is going to be key to stopping, preventing the worst impacts of climate change is reaching net-zero greenhouse gas emissions globally as rapidly as possible.

Every year matters. Every tenth of a degree of warming matters in terms of the impacts and damages and suffering that can be avoided in the future. And so we need to get to net-zero emissions globally as rapidly as we can. If we want to keep warming below 2 degrees Celsius, which is a goal that the IPCC has mapped out for us — the U.N. Intergovernmental Panel on Climate Change — and the goal that the world community committed to at the Paris Climate Accords, we need to do that by 2100 or sooner. And if we want to have a reasonable shot at keeping global warming below one and a half degrees Celsius, which is the more aspirational

goal that the global community has set, we need to do that quite a bit sooner, in the neighborhood of 2070 or earlier than that.

That means that countries like the United States that have the wealth and the technological capability and, arguably, the moral responsibility given our historic contributions to climate change to date, we need to be on a faster track than that. We need to be reaching net zero by 2050 at the latest really. And that's the goal that the Biden administration is committed to. That's the goal that we looked at in the Net-Zero America Study. And that's the track we're trying to get on now.

Ezra Klein

So let's take the big picture of that. It gets called decarbonization, but as I understand it, basically every theory of how to hit net zero by 2050 looks like this — you make electricity clean, you make much more clean electricity, you make almost everything run on electricity, and then you mop up the kind of small industries or productive questions that we have not figured out how to make electric. Is that basically right?

Jesse Jenkins

Yeah, that's a pretty good summary. The challenge today is that about two-thirds of our demand for energy in the United States is for liquid and gaseous hydrocarbons, so that's natural gas that we use to heat our homes, gasoline, diesel, jet fuel, other liquid petroleum-based fuels, and then the petrochemical feed stocks that we use to produce plastics and medicine and all kinds of other things. And it's just really difficult to find drop-in substitutes for those kinds of liquid and gaseous fuels at the scale that we consume them. And so the only way that we're going to get to net zero is to knock down the scale of demand for liquid and gaseous fuels. And so that means growing the role of electricity and steam and hydrogen, and other carbon-free energy carriers that don't contain actually any CO₂ when we use them.

If we can find ways to then produce those carbon-free carriers with carbon-free primary energy sources or inputs, then we can decarbonize a good chunk of the economy. And so we have to basically grow the one third share that we currently get from those carriers, like primarily electricity, to probably something more like two-thirds and knock down the scale of demand for liquid and gaseous fuels, so that we can use a combination of tools that are generally more expensive and less mature than clean electricity options to go ahead, and as you said, mop up the rest. And so that means a combination of carbon capture for large point sources of CO₂ emissions, like say a steel or iron facility, cement production facilities, and large power plants, we can capture the CO₂ emissions from those smokestacks and then store them safely in geologic basins. So that's one way to keep it out of the atmosphere.

The other option is to develop liquid or gaseous fuel substitutes that come from carbon-free sources originally. So say we take CO₂ from the atmosphere or from plants that originally absorbed it from the atmosphere, and we add some hydrogen that we produce from clean electricity, and we add some more heat and some more electricity from carbon-free sources, well, we can make synthetic jet fuel or other liquids that way. It's very energy intensive, but it can be done in a carbon-free way. And so we can then use some amount of those synthetic liquid fuels to, say, power aviation or other really hard to decarbonize sectors.

And then the final option is — and this is really the fallback plan that we really want to use in limited quantities — is that we just keep using fossil fuels in the most high value applications, and then we remove an equivalent amount of CO₂ from the atmosphere to offset that. That's negative emissions. And there's a limited amount of negative emissions that we can really do at any kind of sustainable scale. And so that's really the final option that we want to keep to a limited scale.

Ezra Klein

[By the end of this podcast,] [w]e're going to sort of peel the different pieces of this [overview] apart.

But I want to begin on the question of electricity because every path that I seem to see really puts that at the core of everything. And you write and your colleagues write in the Net-Zero Report that, quote, "expanding the supply of clean electricity is a linchpin in all net-zero paths."

So right now most electricity isn't clean. If you plug something into the wall, you're not necessarily getting clean electricity. I don't think it's completely intuitive why electricity is so much better than a liquid you put into something, even in a potential world for the climate. So why electricity? Why has electrifying everything become almost synonymous with decarbonization in climate world?

Jesse Jenkins

Yeah, there's basically two main reasons why electricity is such a key linchpin. The first is that it's a carbon-free energy carrier. And by that I mean it's a way to move energy around in our economy and convert it and make use of it that doesn't emit any CO₂ directly when we do use electricity. So think about all our alternatives, we could move energy around in the form of liquid fuels, like gasoline or diesel in a tanker truck or a pipeline, or we can move natural gas around in a pipeline to our homes.

But those are hydrocarbon fuels, and so when we consume them, we break the chemical bonds that link the hydrogen and the carbon, and we release CO₂ into the atmosphere. And that's the problem. And so electricity is a way to power our lives — heat homes, power factories, move cars around — that at least when we use the electricity on that end, doesn't lead to any CO₂, or frankly, any other air pollutants and other combustion-related pollutants that cause public health impacts.

So then the challenge is we need to produce that electricity from a carbon-free source, and that's the second reason why electricity is so key because we do actually have a lot of different ways to produce carbon-free electricity. Right, about 40 percent of our electricity today is already carbon free. About half of that comes from nuclear power plants that we built out over the '70s and '80s. And the other half comes from hydro power and more recently, the large-scale growth of wind power and solar power. And we have other options that could be coming down the line in the future as well.

And so if we can grow the share of carbon-free generation, we can decarbonize both the front end of the supply of our energy carriers. And then when we consume that carbon-free electricity on the other end, it doesn't emit CO₂ either. And there's just a lot more ways to produce carbon-free electricity than there are to produce liquid fuels or gaseous fuels, which are pretty much limited to biomass-based fuels, as the only way to kind of make a drop in carbon-neutral fuel that doesn't itself use a lot of electricity to produce.

Ezra Klein

But this is a really big job. You had this statistic in a lecture that has been knocking around in my head — that it took 140 years to build today's power grid. Now, we have to build that much new clean electricity again and then build it again, so we have to build it twice over in just 30 years to hit our goals.

Jesse Jenkins

That's exactly right.

Ezra Klein

That seems really hard.

Jesse Jenkins

I mean, we never said deep decarbonization was easy. The good news, we can talk about this later, is it is actually pretty affordable and has a huge amount of public health benefits that go along with this path. But it is a massive transformation of our energy system, right? We're going to have to rewire the country and change the way we make and use energy from the way we produce it, to the way we transport it, to the way we consume it at a very large scale. And so, yeah, that is the statistic.

If you look at the challenge for electricity is really twofold, we have to cut emissions from the power sector, right? Which already is now the number two, used to be the number one, emitting sector of the economy. Since we have made some progress, electricity is now number two and transportation is edged into the number one position for biggest greenhouse gas polluting sector.

But we have to knock out the rest of those CO₂ emissions. That itself is a big enough challenge, right? To go from 40 percent carbon-free electricity to 100 percent as soon as we can. But at the same time, we have to dramatically expand the supply of overall electricity to power electric cars and to power heat pumps that can efficiently heat and cool our homes instead of relying on natural gas or to power industrial processes or make clean hydrogen, which is another option for an energy carrier when we can't use electricity directly.

And so our estimates are that demand for electricity by 2050 in the United States could grow by more than double, by about 115 to 170 percent across a range of different scenarios in the Net-Zero America Study. And so, yeah, we have to eliminate the large share of fossil energy

generation in our grid today and more than double the overall amount of supply. And what that means is we have to basically build two U.S. power grids over the next 30 years.

Ezra Klein

The big technological project that America's been engaged in, I think, in my lifetime has been digital. Like the dominant story of how America is changing technologically has been digital. And one thing about digital technologies, Facebook just doesn't take up a lot of land in the real world. They have some offices. I'm sure they have some server banks.

But this is a throwback, in a way, to times when we had projects of national size, like the interstate highway system or the original effort to electrify America that requires land. And so give me a sense here of the literal size of the land that you estimate we're going to need to use fully or partially for electricity generation and transmission.

Jesse Jenkins

Yeah, in many ways, this is the return to growth in infrastructure that we really haven't seen in my lifetime or yours, Ezra, right? We have been living off of the nation-building phase in the United States that really spans from the New Deal era through to the end of the 1970s. And since we were born, we've been kind of living off of and barely maintaining and expanding that national scale infrastructure that was built out, whether that was rural electrification and the hydro power dams and the nuclear plants and the whole grid or our national highway system or our ports and airports. We really just haven't seen an era of significant investment in national infrastructure in a generation or two. And you can't build a clean energy economy without rebuilding large amounts of that infrastructure.

And so we are going to need to enter a new era of nation building, right? A new era of investment in physical infrastructure that can build a better country. There are huge benefits associated with this, but are going to mean, we are going to see large-scale construction, and infrastructure, and impacts on lives. And so we have to guide that process in a way that doesn't recreate some of the harms of the last era of nation building, where we drove interstates right through the middle of Black and brown communities, and they had no say in the process. So that's the challenge at a high level is like how do you build a national social license and sense of mission or purpose, and how do you guide the deployment of that infrastructure at scale, which doesn't concentrate harms and spreads benefits amongst the people who really should be benefiting.

Id., at 1 to 6.

There are multiple reasons why inclusion of a DDRE scenario and optimized portfolio in the DEI IRP Update is essential before the Commission considers the Company's options and choices regarding its irrevocable, near-term resource commitments in subsequent CPCN proceedings. Foremost among these reasons is that DDRE is no longer simply the climate and energy policy preference of EMCC and other environmental and sustainable energy advocates. Instead, with the enactment of the IRA and other recent infrastructure legislation, DDRE has become national climate and energy policy with particular goals and strategies of achieving them. And, it is patently obvious at this time – even with

Stakeholder Information Session No. 3 still impending -- that DEI's CO2 scenario and optimized portfolio do not reflect that national climate and energy policy and its particular goals and strategies for achieving them. Thus, the DEI CO2 scenario and optimized portfolio cannot serve as a reasonable proxy for a DDRE scenario and optimized portfolio in its DEI IRP Update.

More specifically, the DEI CO2 scenario cannot serve as a reasonable proxy for a DDRE scenario for at least the following reasons:

- It does not include a CO2 emissions curve over the timeframe from 2022 to circa 2050 which functions as a binding Deep Decarbonization constraint for modeling purposes for either the power sector or the economy as a whole within the DEI service territory;
- It does not include a load forecast for electricity over the time frame from 2022 to circa 2050 which reflects the same order of magnitude of Rapid Electrification for modeling purposes for the economy as a whole within the DEI service territory; and
- It does not reflect the strategy of incentivized technological innovation and collaboration among public and private sectors actors for achieving the levels of Deep Decarbonization and Rapid Electrification over the time frame for 2022 to circa 2050 contemplated by current national climate and sustainable energy policy.

Similarly, the CO2 optimized portfolio cannot serve as a reasonable proxy for a DDRE optimized portfolio for at least the following reasons:

- It does not include a sufficient mix of resource options available to DEI over the time frame from 2022 to circa 2050 to reflect the strategy of incentivized technological innovation and collaboration among public and private sectors actors for achieving the levels of Deep Decarbonization and Rapid Electrification contemplated by current national climate and sustainable energy policy;
- It does not include a build-out of distributed energy resources (e.g. nanogrids, microgrids and virtual power plants) at the edge of the DEI distribution grid over the time frame from 2022 to circa 2050 which reflects the same order of magnitude of Rapid Electrification for the economy as a whole within DEI service territory contemplated by current national climate and sustainable energy policy;
- It does not reflect a realistic set of capabilities and constraints (e.g. private generation serving load at high voltage levels, inherent limitations of a high-voltage transmission system not further sectionalized for planning, expansion and reliability purposes) on central station energy resources interconnected to the transmission grid available to the DEI service territory over the timeframe from 2022 to circa 2050.

Moreover, DEI's plan to move forward with CPCN proceedings before including a DDRE scenario and optimized portfolio in its ongoing IRP Update is plainly contrary to the underlying policy of the non-adjudicative IRP process, which has heretofore been to address and resolve as many issues as possible in the less formal, time-consuming and costly IRP context than to "kick the can down the road" to the more formal, time-consuming and costly CPCN context.

For these reasons, EMCC respectfully requests that the Director recommend and the Commission direct DEI to include a DDRE scenario and optimized portfolio in its IRP Update (including continued Stakeholder Engagement and Regulatory Oversight) prior to initiating CPCN proceedings based on its IRP Update.¹

Respectfully submitted on behalf of Energy Matters Community Coalition, Inc. (EMCC) per motion approved unanimously by its Board of Directors on January 5, 2023.

EMCC Co-Representatives

Barry S. Kastner
Michael A. Mullett

January 13, 2023

¹ Inasmuch as DEI will not conduct the third of its planned Stakeholder Information Sessions until January 27, 2023, EMCC respectfully reserves its opportunity to modify and/or supplement these Comments following completion of that Session, any related informal discovery, and any additional Synapse analyses.