

**BEFORE THE  
LOUISIANA PUBLIC SERVICE COMMISSION**

**ENTERGY LOUISIANA LLC,**  
In re: 2021 Request to Initiate  
Integrated Resource Planning Process  
Pursuant to the General Order  
(Corrected) in Docket No. R.-30021,  
dated April 20, 2012.

**Docket No. I-36181**

**SIERRA CLUB'S COMMENTS ON ENTERGY LOUISIANA'S  
NOVEMBER 22, 2021 DATA FILING FOR THE  
INTEGRATED RESOURCE PLAN CYCLE**

March 15, 2022

Developed with the Assistance of the Applied Economics Clinic

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## SIERRA CLUB COMMENTS

Sierra Club appreciates the opportunity to submit these comments on Entergy Louisiana LLC's ("Entergy" or "ELL") November 22, 2021 Data Filing for the 2021 Integrated Resource Planning process.<sup>1</sup> Sierra Club has been engaged in this and other IRP processes across the country, and welcomes the Louisiana Public Service Commission's ("LPSC" or "Commission") attempt to facilitate a more public and transparent IRP process, which can serve the benefit of reducing long-term costs and risks to Louisiana ratepayers. Sierra Club thanks Entergy for providing information and assisting the stakeholders in understanding the Company's planning objectives and modeling for this Integrated Resource Plan ("IRP"). Sierra Club has identified the following suggestions and concerns.

### **I. Entergy Should Test Earlier Retirement of Coal Units.**

In this IRP, Entergy appears to be assuming that the White Bluff coal units retire in 2028 and Independence coal unit retires in 2030. We understand that Entergy is selecting "optimized portfolios" at a later stage in the IRP process, and we want to ensure that the Company considers earlier coal unit retirements at that stage. In the Entergy Arkansas IRP, the Company modeled several sensitivities for retiring White Bluff 1, White Bluff 2, and Independence at earlier dates, as well as removal of a natural gas plant replacement. The results showed that Entergy Arkansas's "Portfolio 4," where the coal units did not retire early but were not

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<sup>1</sup> These comments were developed with the assistance of Tyler Comings of the Applied Economics Clinic.

replaced with new gas, was the lowest-cost plan modeled (the last column shown in Figure 1 below)—leading the Company to choose it as its preferred plan.<sup>2</sup> However, Entergy Arkansas’s Portfolios 2 and 3, which included earlier retirement dates for the coal units, were very close in cost to the chosen plan; and both portfolios showed that renewable resources were cheaper than a new gas replacement.

**Figure 1: Entergy Arkansas IRP – Sensitivity Portfolio Results Summary<sup>3</sup>**

2023-42 Sensitivity Modeling Results	Future 1	Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4
White Bluff 1 CTUC Date:	2028	2026	2026	2028	2028
White Bluff 2 CTUC Date:	2028	2023	2026	2028	2028
Independence 1 CTUC Date:	2030	2030	2030	2026	2030
Incremental Generation Capacity 2025-2028:	2028 1x1 CCGT 2029 BESS	2025 Solar, Wind & BESS 2026 Solar & Wind 2027 Solar	2025 Solar & Wind 2026 Solar & Wind 2027 Solar	2025 Solar & Wind 2028 Solar, Wind & BESS	2025 Solar & Wind 2028 Solar & Wind 2029 Solar
Total Relevant Supply Cost:	\$6,452	\$6,457	\$6,363	\$6,387	\$6,291

Given these results, Entergy should, at a minimum, test similar sensitivities in the Louisiana IRP. Given decreased renewable and storage cost expectations since the Arkansas modeling was conducted, it is possible that earlier retirement of White Bluff and Independence units with clean replacement is now the lowest-cost option. Similarly, Entergy states that it intends to “exit coal by 2030,” presumably

<sup>2</sup> Entergy Arkansas, LLC 2021 Integrated Resource Plan, Arkansas Docket No. 07-016-U, p.69. Available at: [https://www.entergy-arkansas.com/integrated\\_resource\\_planning/](https://www.entergy-arkansas.com/integrated_resource_planning/)

<sup>3</sup> *Id.* Copy of Entergy’s Table 25, p.69.

meaning that it intends to retire or cease burning coal at both R.S. Nelson and Big Cajun II, Unit 3 by that date<sup>4</sup> Entergy’s IRP should also consider multiple early retirement dates for each of these units, if it is not doing so already. If Entergy does not model such portfolios for White Bluff, Independence, Nelson, and Big Cajun II, then cost-saving opportunities will likely be lost. Moreover, the Commission’s IRP Rules explicitly require the Company to provide “documentation of all analyses leading to recommendations to retire” or extend the life of its existing units.<sup>5</sup> To evaluate the least-cost portfolio of generation resources, the Company should evaluate earlier retirement options for each of those units.

## **II. Entergy Should More Accurately Model Renewable and Storage Resources**

### **A. Entergy likely over-estimates costs of new renewable and storage resources by assuming only self-build resources**

By assuming all resources are self-builds, Entergy likely overstates the cost of renewable energy and storage options. Given Entergy’s pursuit of power purchase agreements (PPAs) in the past and likely future market procurement (which we address further in these comments), the IRP should have included these options. One of the primary goals of the IRP modeling is to optimize resources on a cost-basis; but to do so requires modeling the best information and ownership options available. To preclude the IRP modeling from accessing lower-cost resources means that, by

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<sup>4</sup> ELL 2023 IRP Data Filing Updated, slide 4

<sup>5</sup> LPSC, Integrated Resource Planning Rules for Electric Utilities in Louisiana § 8(d).

definition, it will choose more expensive ones because the model cannot select resources that it does not know exist. PPAs could offer reduced prices and different financing structures that offer lower customer costs than self-build resources. For instance, PPA's allow the developer (and by extension the buyer) to benefit from the full Investment Tax Credit (ITC) for solar or solar-battery hybrids immediately, whereas regulated utilities must "normalize" the credit over the life of the project, as Entergy is assuming in this IRP. The Company must consider these potentially lower-cost ownership options in its model to ensure that it is truly developing a low-cost plan and that the plan comports more closely with reality.

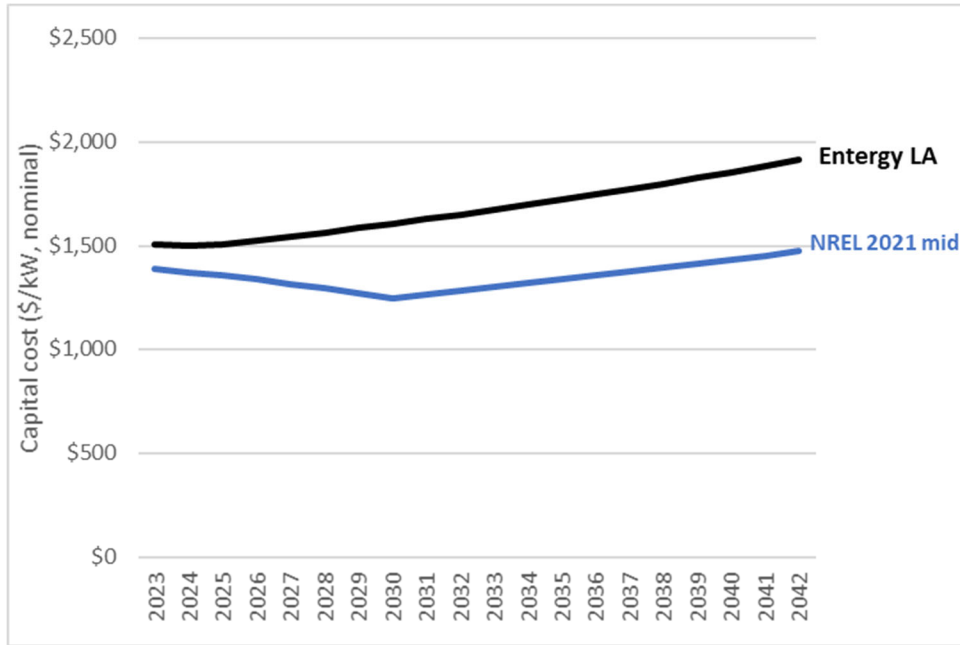
**B. Entergy's Cost Assumptions for On-shore Wind Are Too High.**

When modeling off-shore wind, the Company relies on recent forecasts from the NREL 2021 ATB (National Renewable Energy Laboratory's Annual Technology Baseline), which is a reasonable source. For on-shore wind, however, the Company relies on mostly outdated information including one forecast from 2019 and several from 2020 (such as the year-old NREL 2020 ATB).<sup>6</sup> A comparison of the NREL 2021 ATB costs to Entergy's assumed on-shore wind capital costs is shown below in Figure 2.

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<sup>6</sup> ELL 2023 IRP Data Filing Updated, slide 36

**Figure 2: On-Shore Wind Capital Costs (\$/kW, nominal)<sup>7</sup>**



The Company’s use of outdated on-shore wind forecasts is leading it to overstate the costs of this resource. We recommend that Entergy use the NREL 2021 ATB, which is consistent with its modeling of off-shore wind costs. In addition, the Company’s assumed capacity factor for on-shore is based solely on data from MISO South;<sup>8</sup> but if Entergy could access higher quality wind elsewhere then it should also model such options, for instance, a PPA for wind in Southwest Power Pool.

<sup>7</sup> NREL 2021 ATB, Land-based Wind, adjusted to nominal dollars using NREL’s assumed 2.5% inflation rate, available at: <https://atb.nrel.gov/electricity/2021/data>; ELL 2023 IRP Data Filing Updated, slide 36

<sup>8</sup> ELL 2023 IRP Data Filing Updated, slide 36

**III. Entergy should commit to issue an all-source RFP that is constructed to consider all resource types and to allow for effective competition in this IRP.**

Entergy should issue an all-source RFP or RFI as part of its planning process, as soon as possible, to acquire current market data and to help inform decision-making on low-cost, low-risk resources with high benefit to customers. All-source RFPs have become common practice among utilities. In Arkansas, Southwestern Electric Power Company (“SWEPCO”) committed in its rate case (Docket No. 19-008-U) to conducting an RFP in the event of capacity shortfalls in its next IRP process.<sup>9</sup> Furthermore, many utilities, including Northern Indiana Public Service Company (“NIPSCO”), Public Service New Mexico (“PNM”), and Xcel Energy in Colorado have issued all-source RFPs that allowed those utilities to dramatically expand carbon-free generation, while reducing customers’ costs. All three of these utilities planned to replace coal units with competitive resources, which they: 1) actively sought out and 2) determined that those new resources would be lower-cost by modeling them alongside their existing coal units in their respective resource planning processes. A NIPSCO executive told the *New York Times* about how the company was “surprised” by the RFP results:

[In] Indiana, the Northern Indiana Public Service Company, or Nipsco, opened bidding to outside energy developers and found that adding a mix of wind, solar and batteries would be cheaper than building a new gas plant to replace its retiring coal units. “We were surprised by that,” said Joe Hamrock, the chief executive of the company that owns the Nipsco.

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<sup>9</sup> APSC Docket No. 19-008-U, Modified Settlement Agreement (redacted) at 11-12 (Dec. 26, 2020), available at: [http://www.apscservices.info/pdf/19/19-008-U\\_297\\_1.pdf](http://www.apscservices.info/pdf/19/19-008-U_297_1.pdf).



“Renewables in our particular situation were far more competitive than we realized.”<sup>10</sup>

Entergy should not foreclose the possibility of a lower-cost plan by ignoring the wide market of resources available through a well-constructed competitive solicitation. Entergy should commit to issuing all-source RFP to seek replacement energy and capacity projects to evaluate in this IRP process. A key aspect of this process would be the twin commitments from Entergy to remain agnostic on the type of resources allowed to bid into its solicitation (a true all-source RFP) and, importantly, a commitment from Entergy to be willing to procure from the RFP if the bids received are advantageous to Louisiana customers. The bids received can be used to inform Entergy’s modeling in the 2023 IRP as the most reliable source of resource data. Sierra Club recommends, similar to the productive all-source RFP conducted by NIPSCO in Indiana and others, that an all-source RFP include selecting an independent entity to conduct and oversee the RFP process on Entergy’s behalf and remain as transparent as possible to promote increased and diverse bids.

We encourage Entergy to issue an all-source RFP as part of the process of seeking the most advantageous means of serving its customers’ energy needs. A transparent, robust RFP process will foster low-cost, low-risk resource planning for Entergy’s current IRP and its outlook going forward. Our goal is to encourage the competition of new and existing resources using the best data available. If Entergy

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<sup>10</sup> Plumer, Brad, “*As Coal Fades in the U.S., Natural Gas Becomes the Climate Battleground*,” New York Times, (June 26, 2019), available at: <https://www.nytimes.com/2019/06/26/climate/natural-gas-renewables-fight.html>.

does not elect to do so through an all-source RFP, however, we strongly encourage the Company to issue a Request for Information (RFI) or other reasonable means for gathering up-to-date market intelligence to inform the costs of new resources in the IRP.

#### **IV. Entergy Has Not Fully Addressed the Costs of Hydrogen**

Entergy should estimate costs for all foreseeable and reasonable resource options. We are particularly concerned about the Company's assumptions around converting existing generation to burn hydrogen. As an initial matter, co-firing hydrogen is unproven technology, and we are not aware of any utility-scale power plants burning a significant amount of hydrogen in the United States. Moreover, unless Entergy intends to begin producing green hydrogen, which itself presents challenges, recent analyses indicate that the overall carbon intensity of burning hydrogen produced from gas is actually greater than simply burning gas to generate energy in the first place.<sup>11</sup>

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<sup>11</sup> See Cornell University. "Touted as clean, 'blue' hydrogen may be worse than gas, coal, researchers say." ScienceDaily, (Aug. 12, 2021), available at: <https://www.sciencedaily.com/releases/2021/08/210812161902.htm>; Robert W. Howarth, Mark Z. Jacobson. How green is blue hydrogen? Energy Science & Engineering, 2021; DOI: 10.1002/ese3.956; Burgess, J., "Blue hydrogen 20% worse for GHG emissions than natural gas in heating: study." S&P Global (Aug. 12, 2021), available at: <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/natural-gas/081221-blue-hydrogen-20-worse-for-ghg-emissions-than-natural-gas-in-heating-study>; Botoroff, C., "Hydrogen: Future of Clean Energy or a False Solution?" Sierra Club (Jan. 5, 2022); Blank, T., Molly, P., "Hydrogen's Decarbonization Impact for Industry," Rocky Mountain Institute (Jan. 2020), available at: [https://rmi.org/wp-content/uploads/2020/01/hydrogen\\_insight\\_brief.pdf](https://rmi.org/wp-content/uploads/2020/01/hydrogen_insight_brief.pdf).

In any case, the Company's IRP assumptions around hydrogen are unsupported. Entergy's capital costs for new gas units include conversion to some use of hydrogen but do not appear to account for all of the substantial costs associated with this conversion. The Company should include costs for necessary infrastructure and all variable costs associated with hydrogen including the fuel itself. We understand that this technology is in its infancy, but if this technology is being modeled in the IRP, a "best guess" is better than assuming zero costs.

#### **V. Entergy Should Analyze Public Health Impacts.**

Electricity generation through the burning of fossil fuels has undeniable negative impacts on public health. Under the Commission's IRP Rule, utilities "shall account for environmental impacts and shall discuss the plans to meet environmental regulatory requirements at existing resources subject to such requirements."<sup>12</sup> To protect the communities Entergy serves, and also account for the environmental impacts of its fleet, it is increasingly important for Entergy to include quantified health impacts in its assessments of its portfolio options in this IRP process. Entergy should quantify and analyze the comparative public health impacts from air pollution, namely SO<sub>2</sub>, NO<sub>x</sub>, PM, and mercury emissions, of each of the portfolios it considers in its IRP and evaluate the public health cost that various air pollutants have on public health, especially in environmental justice communities.

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<sup>12</sup> LPSC, Integrated Resource Planning Rules for Electric Utilities in Louisiana § 7(d).

In the selection of a preferred portfolio, Entergy can and should incorporate public health costs into its assessments. Entergy's customers and other Louisianians bear the consequences of the ongoing decision to remain reliant on fossil fuels, which, beyond burdening customer bills, pollute air and waterways and negatively impact public health. Fossil fuel combustion is one of the main sources of harmful air pollutants, exposure to which contributes to increased instances of asthma attacks, respiratory infections, hospital admissions, missed school days and work days, and a variety of other health problems.<sup>13</sup> To comply with the Commission's IRP Rule, Entergy's IRP must "consider[] all relevant costs," including environmental costs.<sup>14</sup> Air pollution contributes significantly to increased morbidity and mortality, and existing modeling tools can be used to translate and monetize air pollution into social cost estimates.<sup>15</sup>

In addition, Entergy should consider the environmental justice implications associated with its ultimate selection of its preferred portfolio because the communities that are harmed most by persisting reliance on fossil fuel burning

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<sup>13</sup> See, e.g., EPA, Sulfur Dioxide Basics, *available at: <https://www.epa.gov/so2-pollution/sulfur-dioxide-basics>* (summarizing public health harms from SO<sub>2</sub>); see also EPA, Ground-level Ozone Basics, *available at: <https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics#effects>* (summarizing public health harms from ozone).

<sup>14</sup> LPSC, Integrated Resource Planning Rules for Electric Utilities in Louisiana § 3(f).

<sup>15</sup> EPA's Environmental Benefits Mapping and Analysis Program - Community Edition (BenMAP-CE) is a modeling software that enables users to estimate health impacts and economic value of changes in air quality and helps analyze the benefits that discrete air pollution reductions can have on human health and the economy. The BenMAP-CE program has been used to assess fossil fuel electricity health impacts and health-related benefits of attaining the reductions in a variety of air pollutants, including ozone and PM<sub>2.5</sub>. BenMAP-CE, *available at: <https://www.epa.gov/benmap>*.

power plants are the communities who should benefit the greatest from reduced emissions, coal retirements, and investments in renewable energy. EJSCREEN<sup>16</sup> is EPA's environmental justice screening and mapping tool that combines environmental and demographic indicators based on nationally consistent data and allows utilities to do just that. When run for a particular power plant, EJScreen demonstrates the relative environmental justice concerns for designated areas by "EJ Indexes," making significant data explicit, especially when reviewing communities that surround facilities and their racial composition, per capita income, and other demographic indicators in relation to various air, water, and waste environmental indicators. Entergy should take care to consider the distinct communities whose health is impacted by Entergy's continued reliance on fossil fuel generation.

## **VI. The Commission Should Change the IRP Process to Incorporate Additional Stakeholder Feedback**

We are concerned that the IRP process in Louisiana does not allow for sufficient opportunities for feedback from stakeholders. After these comments are filed, the Company will have more than seven months to produce a draft IRP but without any required stakeholder feedback as the modeling is being conducted. The next opportunity for other parties to comment will be in ten months; but the possibility for improving the trajectory of the IRP at that time will be limited because the bulk of the modeling will be complete. Even if the Company were to re-vamp their

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<sup>16</sup> Available at: <https://www.epa.gov/ejscreen>.

draft plan at that time, it would have only three months following the Staff report to do so. Therefore, we recommend that Entergy hold two interim stakeholder meetings between now and the draft IRP filing with the understanding that the input from stakeholders will be considered throughout the modeling process leading up to the Draft IRP filing. The Company should provide stakeholders with updates on the modeling one week prior to each of these new meetings.

## **VII. Conclusion**

Incorporating recommendations discussed above into Entergy's IRP will help ensure that the ratepayers of Louisiana enjoy reliable and affordable service. Revising the Company's input assumptions will aid the Company in accounting for the increased risk and variability that currently exists in the utility planning landscape. Sierra Club looks forward to a continued engagement in Entergy's planning process.

Respectfully submitted this 15th day of March, 2022,



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## CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of March, 2022, I have caused a copy of Sierra Club's Comments on Entergy Power's IRP Data Filing to be served by electronic mail on all parties on the Official Service List.



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Lauren Hogrewe  
Sierra Club