

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 615-921-9470

1033 DEMONBREUN STREET, SUITE 205
NASHVILLE, TN 37203

Facsimile 615-921-8011

November 8, 2019

Submitted Via Web,¹ Email,² & U.S. Mail

Matthew Higdon
NEPA Program
Tennessee Valley Authority
400 W. Summit Hill Drive WT-11B
Knoxville, TN 37902

RE: Changes to Green Power Providers Program Draft Environmental Assessment

Dear Mr. Higdon:

The Southern Environmental Law Center, Appalachian Voices, Energy Alabama, green|spaces, Kentucky Chapter of the Sierra Club, Southern Alliance for Clean Energy, Tennessee Chapter of the Sierra Club, Tennessee Conservation Voters, and Tennessee Interfaith Power and Light (Citizen Groups) are concerned that the Tennessee Valley Authority's (TVA) Changes to Green Power Providers Program Draft Environmental Assessment (the draft EA) represents another link in a long chain of TVA actions aimed at limiting consumer choice and energy options in the Valley.

TVA's statements in its filings with the Securities and Exchange Commission (SEC) reveal that TVA views distributed energy resources (DER)—such as those served through the Green Power Providers (GPP) program—as “competition”³ that may “negatively affect[] TVA’s cash flows, results of operations, and financial condition.”⁴ Moreover, prior to issuing the draft EA, TVA adopted an unjustified rate structure change that was specifically intended to obstruct the growth of DER in its service territory.⁵ TVA also issued its 2019 Integrated Resource Plan (IRP) that focused on how to absorb or stifle the effects of DER, rather than on how to best

¹ <http://www.tvanepacomments.com/comments.cfm?pid=rx fz8kwma65qlui4m7m734f3bdhln8 dpb3m4pb1rk7nca3uouw>.

² mshigdon@tva.gov.

³ Attachment (Att.) 1, TVA, Form 10-K at 19 (2018), <http://www.snl.com/Cache/c395786289.html>.

⁴ *Id.* at 38, 41.

⁵ Att. 2, TVA, 2018 Wholesale Rate Change, Draft Environmental Assessment, i (March 2018) (asserting that “TVA’s current energy prices over-incentivize consumer installation of DER” and that rate change is needed to “mitigate[e] the effects”) [hereinafter “2018 Rate Change EA”]; Att. 2b, TVA, 2018 Wholesale Rate Change, Final Environmental Assessment, I, (May 2018).

deploy them to provide least-cost power to the Valley.⁶ TVA has proposed and entered into revised service contracts with many local power companies (LPC) that attempt to restrict for decades the LPCs' choice in serving their customers.⁷ In short, TVA is focused on how best to maintain its existing monopoly business model, rather than adapting and changing to the benefit of ratepayers and communities. Perhaps as a result, TVA now seeks to terminate the GPP program and “replace” it with a “program” that would not compensate customers for the value they provide to the grid and to the Valley.

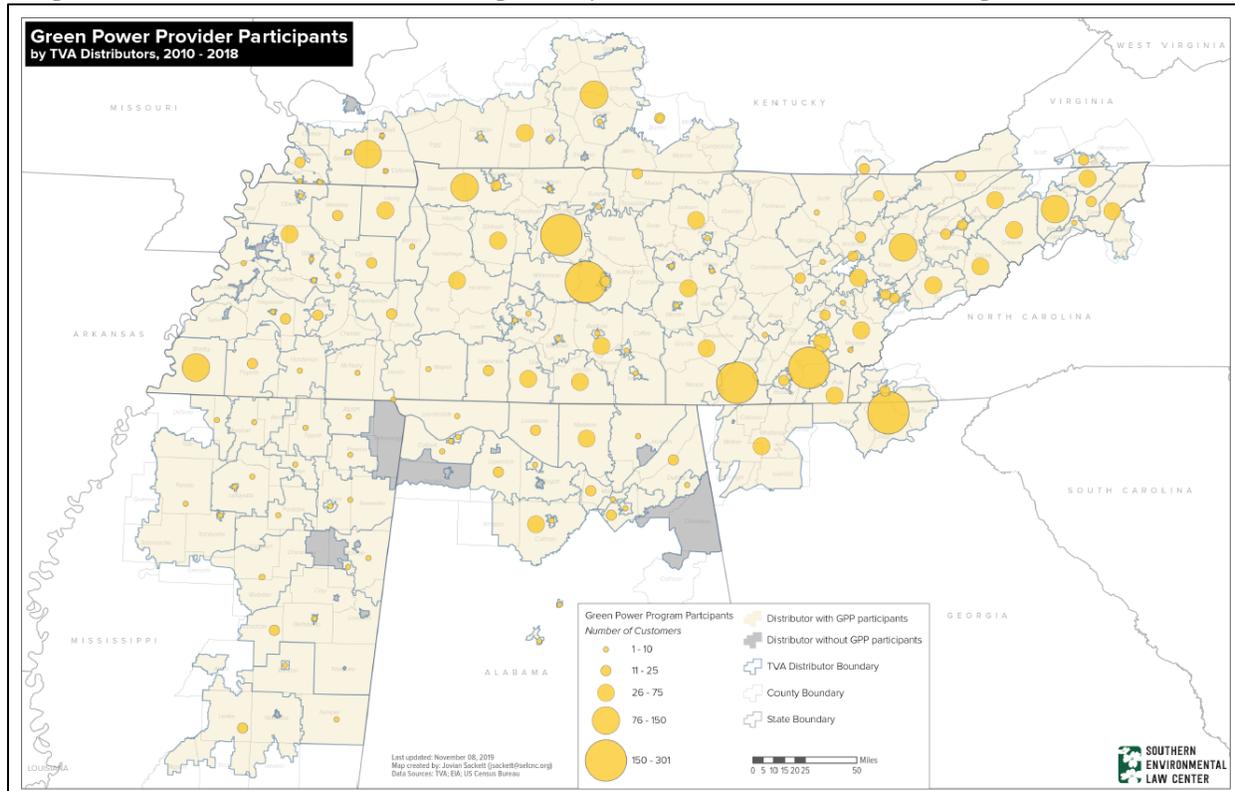
As part of that plan, TVA has issued the draft EA eight months after the Board of Directors decided to terminate the GPP program. Rather than improving its decision-making process through an objective analysis, the draft EA represents a post-hoc rationalization for a decision TVA's Board of Directors has already made and TVA has already implemented. TVA's actions have thereby limited the range of reasonable alternatives and the “no action alternative” has been rendered meaningless.

The purported need and purpose for terminating the GPP program and adopting the No Compensation Alternative do not reflect the facts on the ground. First, current and former GPP participants span across the Tennessee Valley, across a diverse range of local power companies (LPCs). (Map 1). Second, TVA's own market research shows that Valley customers want access to distributed solar generation and want to be appropriately compensated for the value that solar generation provides to the grid. To the extent the GPP program is failing, it is because of the program's design, which has artificially stifled investment in small-scale solar in the Valley. Third, low distributed solar penetration means that any purported cost shifting TVA uses to justify its action is not occurring. Moreover, TVA has not shown that it would occur even at higher penetration levels, nor could TVA make that showing. Fourth, distributed solar generation does not hamstring utility-scale solar, but rather adds independent value to the grid in terms of resiliency, customer choice, line losses, land use, and wildlife effects.

⁶ Att. 3, TVA, 2019 Integrated Resource Plan: Volume I—Final Resource Plan (2019) [hereinafter “2019 IRP”]; Att. 4, TVA, 2019 Integrated Resource Plan: Volume II—Final Environmental Impact Statement (2019) [hereinafter “2019 IRP EIS”].

⁷ When Citizen Groups refer to “customers,” they refer to end-use customers who may be producing and consuming electricity. See Att. 5, NES Contract No. 19-72-316 (twenty-year contract providing NES the opportunity to develop and provide enhanced power supply flexibility for 3–5% of NES's energy) [hereinafter “TVA Long-Term Contract”]; Att. 6, Letter from Stephen A. Smith, SACE, to Members of the KUB Board of Directors, Oct. 17, 2019, <https://cleanenergy.org/blog/tva-contract-drawbacks-outweigh-benefits-for-kub> (discussing the drawbacks that the long-term contract might have in Knoxville Utility Board's territory) [hereinafter “SACE Letter on Long-Term Contracts”]; Att. 7, Daniel Tait & Joe Smyth, *TVA Attempts to Chain Local Power Companies to Longer Contracts in Effort to Prevent Defection Risk*, Energy & Policy Institute, Sept. 22, 2019, <https://www.energyandpolicy.org/tva-local-power-companies-defection/> [hereinafter “Energy Policy Institute Article”]; Att. 8, Dave Flessner, *TVA Offers Rebates to Local Power Companies that Sign Long-Term Contracts with TVA*, Chattanooga Times Free Press, Aug. 22, 2019, <https://www.timesfreepress.com/news/breakingnews/story/2019/aug/22/tva-cut-wholesale-rates-local-power-companies-sign-20-year-contracts/501821> [hereinafter “Flessner Article”].

Map 1. Green Power Provider Participants by TVA Local Distribution Companies, 2010–2018⁸



Instead of working to address the shortcomings of the current GPP program by proposing reasonable alternatives like retail net metering and the Promote DER strategy from TVA’s 2019 IRP, TVA proposes to eliminate the GPP program and instead essentially support individuals who would install solar without any TVA involvement. That proposal ignores the body of literature—including TVA’s own distributed generation integrated value methodology—that highlights the benefits of distributed solar, as well as the third-party market research that shows customers in the Valley want solar options and want a program that fully compensates their exported solar generation.

The paltry analysis TVA includes in the draft EA is conclusory, vague, and largely based on tenuous assumptions. TVA has failed even to take a hard look at the cumulative impacts of the alternatives it did consider, particularly the effect that stifling the distributed solar industry would have on greenhouse gas emissions and climate change.

⁸ Att. 9, Southern Environmental Law Center, *Green Power Provider Participants by TVA Distributors, 2010–2018* (2019). The map was created based on data provided in response to a Freedom of Information Act Request to TVA. Att. 10, TVA FOIA Response (2018).

This bevy of errors is not harmless. If TVA had considered an adequate range of reasonable alternatives, and had taken a hard look at the effects of those alternatives, the result would require an environmental impact statement (EIS) that assesses real GPP program replacements that would compensate customers for solar exports based on the value they add to the grid and to the Valley.

Because TVA has failed to comply with NEPA, it cannot move forward with terminating and replacing the GPP until it has withdrawn the draft EA and issued a draft EIS that considers an appropriate range of reasonable alternatives and takes a hard look at the effects of the proposal on the human environment.

Sincerely,



Christina I. Reichert
Amanda Garcia
Southern Environmental Law Center

Maggie Shober
Southern Alliance for Clean Energy

Bill Moll
Tennessee Chapter of the Sierra Club

Darlene Panvini
Tennessee Conservation Voters

Paul Slentz
Tennessee Interfaith Power and Light

Rory McIlmoil
Appalachian Voices

Daniel Tate
Energy Alabama

Michael Walton
green|spaces

Joey Shadowen
Kentucky Chapter of the Sierra Club

Attachments provided via ShareFile link: <https://southernenvironment.sharefile.com/d-s6ae72889d814c0fb>

COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT

FACTUAL BACKGROUND

I. TVA fails to give distributed solar generation credit for the value it provides to the grid and the Valley.

The long-term value of distributed solar is significantly higher than the amount for which TVA gives it credit. In 2015, after TVA recognized the market shift towards greater renewable energy and distributed generation adoption, it developed a methodology to assess the value that distributed resources might offer to the grid and the Valley (distributed generation-integrated value or DG-IV methodology).⁹ TVA's initial study focused on small-scale solar installations with a maximum system size of 50 kW.¹⁰ TVA currently relies solely on its average avoided energy costs to determine how much it will compensate customers for solar exports outside of the GPP program.¹¹ In contrast, TVA included several value streams in the DG-IV methodology, as show in Table 1.¹²

⁹ Att. 11, TVA, *Distributed Generation-Integrated Value (DG-IV): A Methodology to Value DG on the Grid 1* (Oct. 2015) [hereinafter "DG-IV Methodology"].

¹⁰ DG-IV Methodology at 1.

¹¹ TVA, Dispersed Power Production Guidelines Att. A, A-1 to A-2 (November 1, 2019), https://www.tva.gov/file_source/TVA/Site%20Content/Energy/Renewables/Dispersed%20Power%20Program/dispersed.pdf.

¹² DG-IV Methodology at 6.

Table 1. Categorization of DG-IV Components¹³

Table 3: Categorization of DG-IV Components

Categories	Components	Description	
Included in DG-IV Methodology	Generation Deferral (Capital & Fixed Operations & Maintenance)	The marginal system capacity and fixed operations and maintenance value of deferred generation additions (including reserves) due to DG	
	Avoided Energy (Fuel, Variable Operations & Maintenance, Start-up)	The marginal system energy, fuel, variable operations and maintenance, and start-up value of generation displaced by DG	
	Environmental (Compliance & Market)	Compliance - addresses regulatory compliance components that are incorporated as part of TVA's system portfolio analysis (e.g., CO ² , coal ash, cooling water)	Market - the individual market value a DG resource adds to the valuation methodology in addition to regulatory compliance value (e.g., renewable energy credits)
		Transmission System Impact	Net change in transmission system infrastructure due to presence of DG (i.e., transmission required, deferred, or eliminated)
	Distribution System Impact	Net change in distribution system infrastructure due to presence of DG (i.e., distribution required, deferred, or eliminated)	
	Losses (Trans. & Distr.)	Net change in transmission and distribution system losses due to presence of DG	
Program Design Considerations	Local Power Company (LPC) Costs & Benefits	Associated costs of implementing renewable energy programs (e.g., administrative, operational, engineering), and potential LPC-specific distribution system benefits	
	Economic Development	Regional job and economic growth caused by DG growth	
	Customer Satisfaction	Enhanced customer value due to preference, optionality, or flexibility	
	Local Differentiation	Site-specific benefits and optimization (e.g., geographic location, placement & optimization of distribution grid, load demand reduction)	
Placeholder Topics	System Integration/ Ancillary Services	The symbiotic value of smart grid resources and high levels of DG penetration, and cost of integration of non-dispatchable resources - further study and data required	
	Additional Environmental Considerations	Additional environmental factors that are not specifically addressed as part of the environmental compliance or market values	
	Security Enhancement	Increased system resiliency to reduce power outages and rolling blackouts due to presence of DG	
	Disaster Recovery	The ability and pace of DG assets to assist with system restoration after significant damages caused by natural disasters	
	Technology Innovation	Impact value associated with technology-driven investment in DG	

As the peer review team for DG-IV explained in detail, even that methodology is deeply flawed and incomplete.¹⁴ However flawed, the DG-IV methodology still shows that distributed solar would provide substantial value to the grid and the Valley, as shown in Table 2. The DG-IV methodology estimated that distributed solar generation would provide a 20-year average long-term avoided cost value to TVA of 7.2 cents per kWh.¹⁵ In addition to these narrow values,

¹³ *Id.*

¹⁴ Att. 12, Virginia Lacy et al., *TVA Value of Solar Reviewer Comments* (2015).

¹⁵ DG-IV Methodology at 8–10.

the DG-IV methodology also calculated the value that distributed solar generation provides to the Valley, including avoided carbon, conventional pollution, and water impacts.¹⁶ At the high end, including these avoided environmental impacts resulted in a value of 13.11 cents per kWh.¹⁷

Table 2. DG-IV Calculation and Example Values¹⁸

<i>Values Provided are for Illustrative Purposes Only</i>		
DG-IV Methodology Components	20-Year Average Example Values (¢/kWh) ^a	Boundary Conditions & Additional Comments
Generation Deferral (G)		Total Solar Penetration = 2000 MW AC solar; Solar Penetration Rate = All loaded into model in 1st year; Solar NDC = 50%
Capital	1.3	
Fixed O&M	0.2	
TOTAL	1.5	
Avoided Energy (E)		NOTE: Values for Generation Deferral and Avoided Energy are derived from base condition input ranges at a defined point in time. These values will change across various planning horizons and can range between +/- 15% or more of the values listed
Fuel	4.4	
Variable O&M	0.1	
Start-Up	0.1	
TOTAL	4.6	
Environmental		
Compliance (ENVC)	0.2	Compliance – CO2 proxy cost curve beginning in 2022
Market (ENVM)	0.1	Market – Voluntary REC value (\$1/MWh) applied from 2015-2021 at an 1.9% escalation rate
Transmission Impact (T) ^b	0.4	Point-to-Point Transmission Service Rate = \$1.73 per kw-month Solar NDC = 50% Escalation rate = 2% per year
Distribution Impact (D) ^c	0	Total Solar Penetration = 0.5 MW AC on feeder Solar Penetration Rate = All loaded in 1st year
Losses		
Transmission Losses (TL)	2.6%	Transmission – Average marginal loss savings at 1 MW AC
Distribution Losses (DL)	1.6%	Distribution – Average net marginal loss savings at 0.5 MW AC
DG-IV Calculation	$(G + E + ENVC + T + D) * (1 + TL + DL) + ENVM$	
DG-IV Example Value	7.2	20 Year Average Value ^d - approximate value that is subject to change (from base condition input ranges at a defined point in time)
	5.7	1st Year Value ^e - approximate value that is subject to change (from base condition input ranges at a defined point in time)
<i>Values Provided are for Illustrative Purposes Only</i>		
Carbon Impacts ^f	0-2.4	Based on the social cost of carbon and the projected carbon intensity of the TVA generation fleet.

¹⁶ DG-IV Methodology at 23.

¹⁷ *Id.*

¹⁸ *Id.*

Common Pollutant Impacts ^f	0-3.5	Estimated societal cost associated with common pollutants of SO ₂ , VOCs, NO _x , PM _{2.5} , PM ₁₀ and NH ₃
Water Impacts ^f	0-0.01	The value that distributed solar provides as a buffer from the marginal or system impacts of decreased thermoelectric generation in times of drought or heat waves. Based on the replacement cost of power related to thermal derates (fossil and nuclear).

^a All values are leveled over 2015-2034 at an 8% discount rate

^b This value may be revised to include integration costs (if applicable)

^c Additional explanation provided in 'Distribution Impact & Losses' section of this document

^d See Figure 10 for further explanation of average vs. 1st year value

^e Based on a 3% escalation rate

^f These values, proposed by stakeholders, did not gain group consensus. They are shown here for information only and are not included in the example calculation.

Other utilities have conducted robust analyses to find that distributed solar generation provides value to the grid at twice the retail electricity rate.¹⁹ For example, Maine studied the value of distributed solar, considering the components identified in Table 3.

Table 3. Benefit/Cost Basis²⁰

Component	Benefit/Cost Basis
Avoided energy cost	Hourly avoided wholesale market procurements, based on ISO New England day ahead locational marginal prices for the Maine Load Zone.
Avoided Generation Capacity and Reserve Capacity Costs	ISO New England Forward Capacity Market (FCM) auction clearing prices, followed by forecasted capacity prices by the ISO's consultant. For reserves, the ISO's reserve planning margin is applied.
Avoided NG Pipeline Costs	Not included, but left as a future placeholder if the cost of building future pipeline capacity is built into electricity prices.
Solar Integration Costs	Operating reserves required to handle fluctuations in solar output, based on the New England Wind Integration Study (NEWIS) results.
Avoided Transmission Capacity Cost	ISO New England Regional Network Service (RNS) cost reductions caused by coincident solar peak load reduction.
Avoided Distribution Capacity Cost	Not included, but left as a future placeholder if the peak distribution loads begin to grow (requiring new capacity).
Voltage Regulation	Not included, but left as a future placeholder if new interconnections standards come into existence allowing inverters to control voltage and provide voltage ride-through to support the grid.
Net Social Cost of Carbon, SO₂, and NO_x	EPA estimates of social costs, reduced by compliance costs embedded in wholesale electricity prices.

¹⁹ See, e.g., Att. 13, Maine Public Utilities Comm'n, Maine Distributed Solar Valuation Study (Apr. 14, 2015) [hereinafter "Maine Value of Solar"].

²⁰ *Id.* at 3-4.

Market Price Response	The temporary reduction in electricity and capacity prices resulting from reduced demand, based on the Avoided Energy Supply Costs in New England (AESC) study.
Avoided Fuel Price Uncertainty	The cost to eliminate long term price uncertainty in natural gas fuel displaced by solar.

Maine found that in the first year, the avoided market costs—including energy supply, transmission deliver, and distribution delivery—of distributed solar generation was 9.0 cents per kWh.²¹ The societal benefits were estimated at 9.2 cents per kWh.²² (Figure 1).

Figure 1. Value of Distributed Solar—First Year (\$/kWh)²³

First Year		Distributed Value (\$/kWh)	
Energy Supply	Avoided Energy Cost	\$0.061	} Avoided Market Costs \$0.090
	Avoided Gen. Capacity Cost	\$0.015	
	Avoided Res. Gen. Capacity Cost	\$0.002	
	Avoided NG Pipeline Cost		
	Solar Integration Cost	-\$0.002	
Transmission Delivery	Avoided Trans. Capacity Cost	\$0.014	} Societal Benefits \$0.092
Distribution Delivery	Avoided Dist. Capacity Cost		
	Voltage Regulation		
	Environmental	Net Social Cost of Carbon	\$0.021
	Net Social Cost of SO ₂	\$0.051	} Societal Benefits \$0.092
	Net Social Cost of NO _x	\$0.011	
Other	Market Price Response	\$0.009	
	Avoided Fuel Price Uncertainty	\$0.000	
		\$0.182	

Over the long-term, Maine found that the twenty-five year levelized avoided market costs of distributed solar generation was 13.8 cents per kWh and the societal benefits were 19.9 cents per kWh.²⁴ (Figure 2).

²¹ *Id.* at 4.

²² *Id.*

²³ *Id.* at 5.

²⁴ *Id.* at 6.

Figure 2. Value of Distributed Solar—25 Year Levelized (\$ per kWh)²⁵

25 Year Levelized		Gross Value	Load Match Factor	Loss Savings Factor	Distr. PV Value			
		A	×	B	×	(1+C)		
		(\$/kWh)		(%)		(%)		
					=	D		
						(\$/kWh)		
Energy Supply	Avoided Energy Cost	\$0.076				6.2%	\$0.081	} AVOIDED MARKET COSTS
	Avoided Gen. Capacity Cost	\$0.068		54.4%		9.3%	\$0.040	
	Avoided Res. Gen. Capacity Cost	\$0.009		54.4%		9.3%	\$0.005	
	Avoided NG Pipeline Cost							
	Solar Integration Cost	(\$0.005)				6.2%	(\$0.005)	
Transmission Delivery Service	Avoided Trans. Capacity Cost	\$0.063		23.9%		9.3%	\$0.016	} \$0.138
Distribution Delivery Service	Avoided Dist. Capacity Cost							
	Voltage Regulation							
Environmental	Net Social Cost of Carbon	\$0.020				6.2%	\$0.021	} SOCIETAL BENEFITS
	Net Social Cost of SO ₂	\$0.058				6.2%	\$0.062	
	Net Social Cost of NO _x	\$0.012				6.2%	\$0.013	
Other	Market Price Response	\$0.062				6.2%	\$0.066	} \$0.199
	Avoided Fuel Price Uncertainty	\$0.035				6.2%	\$0.037	
							\$0.337	

As explained above and throughout this letter, distributed solar provides significant value in addition to marginal avoided energy. However, TVA does not even adequately credit distributed solar’s marginal avoided energy benefit. It is worth examining TVA’s valuation at this basic level because it illustrates the degree to which TVA is undervaluing solar as a resource.

A recent study conducted by Greenlink on behalf of the Southern Environmental Law Center shows that the avoided energy-only price TVA offers as compensation for distributed solar exports is significantly less than the cost of generating power from TVA’s most expensive unit operating (i.e. the marginal unit) on an hour-by-hour basis.²⁶ Greenlink found that for 2014–2018, the weighted average value of solar on the system on an hourly basis was about \$49/MWh over the past five years, and was high last year, at almost \$85/MWh. Thus, distributed solar

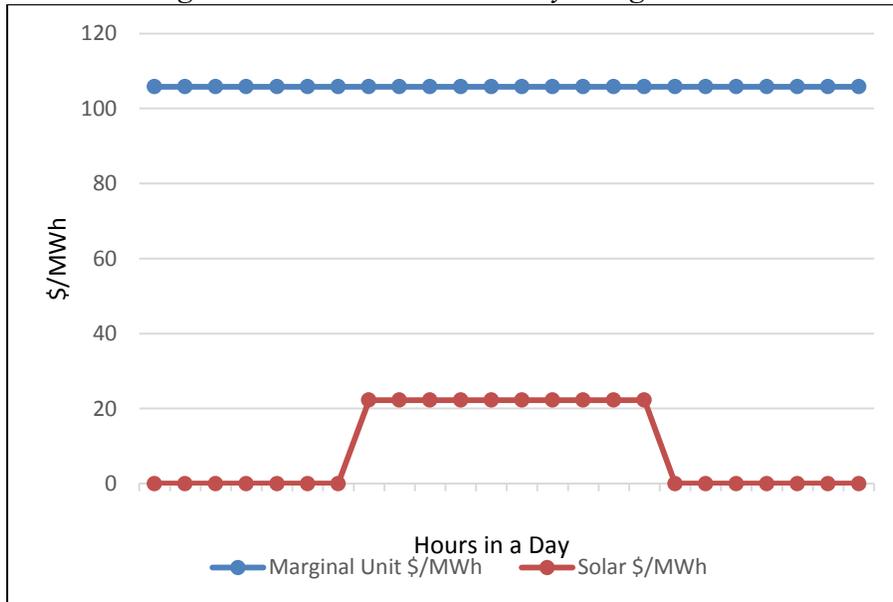
²⁵ *Id.*

²⁶ Greenlink collected TVA plant data from form EIA-860 and hourly generation data from EPA’s Air Markets Program Data (AMPD) for the years 2014–2018. Greenlink compiled fuel costs for each power plant from S&P Global’s modeled production cost database for each plant in TVA territory. Fuel costs are not the only component determining the marginal cost (other variable costs associated with unit operations are also incorporated), but not all of those costs could be captured for every TVA unit. As a result, Greenlink’s results are necessarily conservative estimates. By coupling generation costs with hourly generation data, Greenlink was able to produce a database of each plant on the margin for any given hour over the 2014–2018 period. That analysis established the blue lines in Figures 3 and 4, representing the cost for the marginal unit in each hour for the given day depicted. Greenlink determined the cost for solar generation using Nashville as a proxy for average solar insolation over TVA’s territory. Greenlink collected hourly solar data from the National Renewable Energy Laboratory’s PVWatts tool. For the 2018 winter peak day, Greenlink used TVA’s Off Peak pricing for January 2018 as the cost of solar (\$22.26/MWh). Att. 14, Letter from Christopher W. Hansen, TVA, to DPP Participant, Dec. 28, 2017. For the 2018 low demand day, Greenlink used TVA’s Off Peak pricing from October 2019 (\$21.44/MWh). Att. 15, Letter from Christopher W. Hansen, TVA, to DPP Participant, Oct. 31, 2019.

exports could be used to offset TVA’s use of more expensive marginal resources. Greenlink’s analysis shows that TVA has been undervaluing and undercompensating distributed solar. TVA’s failure to adequately compensate solar even on an avoided-energy basis has undoubtedly contributed significantly to lower levels of customer investment in the resource.

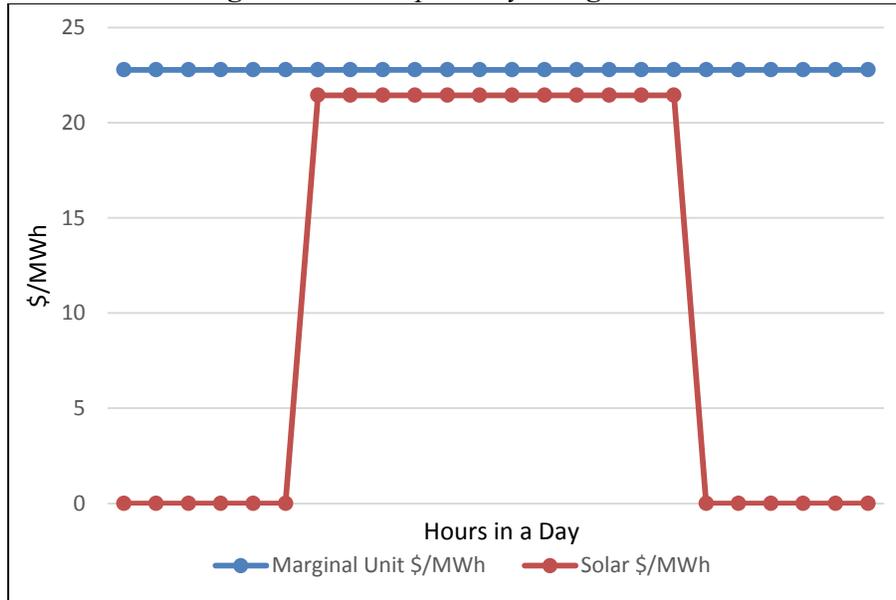
At a more granular level, Greenlink conducted this analysis for the 2018 winter peak day and a day in 2018 when system-wide demand was relatively low. Figure 3 shows that for the 2018 winter peak day, the marginal unit—Johnsonville Combustion Turbine—cost about \$105.81 to generate one MWh of electricity (blue line). During the hours distributed solar was generating that day, TVA compensated it at \$22.26/MWh (red line). In other words, during the 2018 winter peak day, distributed solar provided an uncompensated marginal avoided energy benefit of \$83.55/MWh.

Figure 3. 2018 Winter Peak Day Marginal Cost



Even on a day in 2018 when system-wide demand was relatively low, Greenlink found that distributed solar provided an uncompensated marginal avoided energy benefit. (Figure 4).

Figure 4. 2018 April Day Marginal Cost



All of these studies show that solar generation would benefit the grid, whether considering solely marginal avoided energy costs—a narrow, incomplete view of solar’s full value—or the full value that solar provides to the grid and the Valley. As described throughout this letter, because TVA fails to appropriately recognize that value, it has made policy choices to undermine distributed generation’s growth in the Valley, to the detriment of both its bottom line and the citizens of the Valley.

II. TVA has taken steps to undermine distributed solar generation in the Valley.

TVA has made clear that it sees DER as a threat to its bottom line. In filings with the Securities and Exchange Commission (SEC), TVA explained that DER—which is supported through the GPP program—is “competition”²⁷ that may “negatively affect[] TVA’s cash flows, results of operations, and financial condition.”²⁸ That sentiment underlies recent actions TVA has taken to undermine DER in the Valley.

First, TVA adopted an unjustified rate structure change that was specifically intended to obstruct the growth of DER in its service territory.²⁹ Second, TVA issued its 2019 Integrated Resource Plan (IRP) that focused on how to absorb or stifle the effects of DER, rather than on

²⁷ TVA, Form 10-K at 19.

²⁸ *Id.* at 38, 41.

²⁹ 2018 Rate Change EA at i (asserting that “TVA’s current energy prices over-incentivize consumer installation of DER” and that rate change is needed to “mitigate[e] the effects”); Att. 16, Comments from Zachary M. Fabish, Sierra Club, & Amanda Garcia, SELC, to Matthew Higdon, TVA, Apr. 9, 2018.

how to best deploy them to provide least-cost power to the Valley.³⁰ Third, TVA proposed and signed revised long-term contracts that would bind a LPC to TVA for twenty-years while simultaneously restricting the LPC's flexibility to meet its demand to 3–5% of the LPC's load.³¹

Together, these statements and actions suggest that TVA is focused on how best to maintain its monopoly business model, rather than adapting and changing for the benefit of ratepayers and communities. Perhaps as a result, TVA now seeks to terminate the GPP program and instead create a “program” that would offer no compensation to customers for the value of solar. The draft EA includes three alternatives:

Alternative A, No Action Alternative: maintaining the current GPP program;

Alternative B, No Replacement Alternative: terminating the current GPP program and providing no replacement; and

Alternative C, No Compensation Alternative (TVA's Preferred Alternative): terminating the current GPP program, and “replacing” it with (1) no compensation for the value that customers provide to the grid and the Valley, (2) a list of suggested solar installers, (3) information about interconnection, and (4) information about disposing of solar panels at the end of their useful life.

LEGAL FRAMEWORK

I. The National Environmental Policy Act

The National Environmental Policy Act (NEPA) is “our basic national charter for protection of the environment.”³² It promotes efforts which “will prevent or eliminate damage to the environment.”³³ At its core, NEPA is intended to improve government decisions through a requirement that federal entities consider the environmental effects of their actions prior to taking them.³⁴ It accomplishes this goal by requiring federal entities to take a “hard look” at the potential environmental effects through three levels of review.³⁵

³⁰ 2019 IRP; 2019 IRP EIS; Att. 17, Comments from Christina I. Reichert et al., SELC et al., to Ashley Pilakowski, TVA, Apr. 7, 2019 [hereinafter “SELC et al. 2019 IRP Comments”].

³¹ TVA Long-Term Contract; SACE Comments on Long-Term Contracts; Energy Policy Institute Article; Flessner Article.

³² 40 C.F.R. § 1500.1(a).

³³ 42 U.S.C. § 4321.

³⁴ 40 C.F.R. § 1501.1(a), (d); *id.* § 1501.2.

³⁵ *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 374 (1989).

First, if a proposed action fits within a category “which do[es] not individually or cumulatively have a significant impact on the human environment and which ha[s] been found to have no such effect in procedures adopted by a Federal agency,” the action is categorically excluded from NEPA analysis.³⁶

Second, an agency may prepare an environmental assessment (EA), which is a “concise public document” intended to help the agency determine whether to prepare an environmental impact statement (EIS) or finding of no significant impact (FONSI).³⁷ An EA must include a discussion of the need for the proposal, alternatives to the proposal, the environmental impacts of the proposed action and alternatives in accordance with NEPA § 102(2)(E).³⁸

The alternatives analysis is the heart of NEPA.³⁹ Federal entities must “[r]igorously explore” and “objectively evaluate” all reasonable alternatives including a no action alternative.⁴⁰ The alternative analysis requires disclosure and analysis of direct and indirect individual and cumulative effects of each alternative.⁴¹ Direct effects “are caused by the action and occur at the same time and place.”⁴² Indirect effects “are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”⁴³ “Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.”⁴⁴

Third, if a proposal constitutes a “major federal action[] significantly affecting the quality of the human environment,” an agency must prepare an EIS.⁴⁵ A “major federal action” includes an action with effects that may be major and which are potentially subject to Federal control and responsibility.⁴⁶ The term “major” reinforces but does not have a meaning independent of significantly.⁴⁷ To determine significance, an agency must consider both context and intensity.⁴⁸ Context means the significance of an action in the context of “society as a whole (human,

³⁶ 40 C.F.R. § 1508.4.

³⁷ *Id.* § 1508.9.

³⁸ 42 U.S.C. § 4332(E); 40 C.F.R. § 1508.9.

³⁹ 40 C.F.R. § 1502.14.

⁴⁰ *Id.* § 1502.14, (a), (d).

⁴¹ *Id.* § 1502.16.

⁴² *Id.* § 1508.8(a).

⁴³ *Id.* § 1508.8(b). *Accord Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1286 (1st Cir. 1996).

⁴⁴ 40 C.F.R. § 1508.7.

⁴⁵ 42 U.S.C. § 4332(c).

⁴⁶ 40 C.F.R. § 1508.18.

⁴⁷ *Id.* § 1508.18.

⁴⁸ *Id.* § 1508.27.

national), the affected region, the affected interests, and the locality.”⁴⁹ Intensity requires consideration of the following factors, among others:

- (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
- (2) The degree to which the proposed action affects public health or safety.
- (3) The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- (4) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- (5) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.⁵⁰

An action may be significant if any one of factors identified in the regulations is met.⁵¹ If an agency must complete an EIS, it must also “[r]igorously explore” and “objectively evaluate” reasonable alternatives, including a no action alternative, and must analyze the direct and indirect individual and cumulative effects of those alternatives.⁵² The agency must “devote substantial treatment” to each alternative “so that reviewers may evaluate their comparative merits.”⁵³

Agencies may also tier environmental reviews when appropriate. “Tiering” involves covering broader environmental effects in a more programmatic EIS, followed by detailed site-specific assessments in narrower NEPA analyses that incorporate by reference the discussions of the programmatic EIS.⁵⁴

⁴⁹ *Id.* § 1508.27(a).

⁵⁰ *Id.* § 1508.27(b).

⁵¹ *Ocean Advocates v. U.S. Army Corps of Eng’rs*, 361 F.3d 1108, 1125 (9th Cir. 2004).

⁵² 40 C.F.R. § 1502.14(a), (d); *id.* § 1508.8(a).

⁵³ *Id.* § 1502.14(b).

⁵⁴ *Id.* § 1508.28.

THE DRAFT ENVIRONMENTAL ASSESSMENT

Before TVA can take further action to undermine customer choice in the Valley, it must comply with the National Environmental Policy Act (NEPA). It has failed to do so. First, TVA has limited the choice of reasonable alternatives because the Board has already made its decision to terminate the GPP program, and TVA has essentially implemented that decision. Second, TVA's analysis of the proposal's need and purpose is arbitrary and capricious because it is contrary to the evidence before TVA. Third, the draft EA includes an incomplete, arbitrarily narrow set of alternatives that does not include any alternatives that would compensate distributed solar for the value it provides to the grid and the Valley. Fourth, TVA failed to take a hard look at the effect of terminating the GPP program and adopting the No Replacement or No Compensation Alternative on the human environment, particularly cumulative effects and climate impacts. Finally, TVA must prepare an EIS because five of the relevant factors indicate that the project would significantly affect the human environment.

I. TVA has already terminated the GPP program, and thus has limited the range of reasonable alternatives in the draft EA.

Prior to conducting this NEPA analysis, TVA's decision-maker—the Board of Directors⁵⁵—passed a Board resolution to terminate the GPP program.⁵⁶ Since then, TVA has been implementing the Board's decision such that the range of reasonable alternatives considered in the EA has been limited impermissibly. “NEPA's effectiveness depends entirely on involving environmental considerations in the initial decisionmaking process.”⁵⁷ NEPA regulations explain that prior to finalizing a NEPA review, “no action concerning the proposal shall be taken which would . . . [l]imit the choice of reasonable alternatives.”⁵⁸ TVA's process for the draft EA violates NEPA because (1) the Board issued its final decision prior to and without the benefit of an environmental assessment; and (2) TVA has implemented the Board's decision and thereby limited the choice of reasonable alternatives.

⁵⁵ See 16 U.S.C. § 831a(g)(1) (outlining the role of the Board of Directors).

⁵⁶ Although the Board resolution made this decision “contingent on the satisfactory completion of any environmental reviews determined to be required by federal law,” that fact does not excuse TVA's pro forma compliance with NEPA. See Comments, The Draft Environmental Assessment, Section II.A–B.

⁵⁷ *Metcalf v. Daley*, 214 F.3d 1135, 1145 (9th Cir. 2000) (citing 40 C.F.R. §§ 1501.2, 1502.5, & *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)).

⁵⁸ 40 C.F.R. § 1506.1(a).

A. The TVA Board passed a resolution to terminate the GPP program without the benefit of the information developed through NEPA analysis.

When a federal entity's leadership makes a decision about whether to take an action, NEPA requires that it do so with the benefit of the analysis of a range of reasonable alternatives and their effects.⁵⁹ For the current action, the TVA Board decided to terminate the GPP program eight months prior to the release of the draft EA.⁶⁰ NEPA's requirement to conduct environmental reviews is "one of the 'action-forcing' provisions intended as a directive to 'all agencies to assure consideration of the environmental impact of their actions in decisionmaking.'"⁶¹ Compliance with this requirement "ensures that the agency . . . will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger [public] audience."⁶² In connection with the preparation of an EA, "[p]roper timing is one of NEPA's central themes," therefore, an assessment must be "prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made."⁶³ "Early enough" means "at the earliest possible time to insure that planning and decisions reflect environmental values."⁶⁴ NEPA seeks to ensure that "important effects will not be . . . discovered [only] after the die [is] otherwise cast."⁶⁵

At the time of the Board's decision, no environmental information was publicly available, presented, or considered. The Board acted without the information normally provided by NEPA analysis, and therefore, failed to carefully consider detailed information concerning significant environmental impacts. "The unequivocal intent of NEPA is to require agencies to consider and give effect to the environmental goals set forth in the Act, not just to file detailed impact studies which will fill governmental archives."⁶⁶ The Board did not publicly review alternatives to the

⁵⁹ *Id.* § 1501.1(a), (d); *id.* § 1501.2.

⁶⁰ TVA Board Resolution 19-01-12. Dual Metering Standard Changes and Design Exploration for Green Power Providers (Feb. 2019), in Att. 18, TVA, Minutes of Meeting of the Board of Directors, Feb. 14, 2019, at 14–15 [hereinafter "Board Resolution"]; Att. 19, TVA, Board Meeting, presented Feb. 14, 2019, at 56–60 [hereinafter "Presentation to the Board"]; TVA, TVA Board of Director's Meeting—February 14, 2019, at 1:39:57 to 1:44:28 [hereinafter "TVA Board Meeting Video"].

⁶¹ *Kleppe v. Sierra Club*, 427 U.S. 390, 409 (1976).

<https://tva.mediaplatform.com/#!/video/853/TVA+Board+of+Directors+Meeting+-+February+14,+2019>.

⁶² *Methow Valley*, 490 U.S. at 349; *Found. on Econ. Trends v. Heckler*, 756 F.2d 143, 147 (D.C. Cir.1985) ("NEPA's dual mission is thus to generate federal attention to environmental concerns and to reveal that federal consideration for public scrutiny.").

⁶³ *Metcalf*, 214 F.3d at 1142.

⁶⁴ *Id.* (citing *Andrus v. Sierra Club*, 442 U.S. 347 (1979)).

⁶⁵ *Methow Valley*, 490 US at 349. *Accord Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998) (NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decisionmaking to the end that 'the agency will not act on incomplete information, only to regret its decision after it is too late to correct.'").

⁶⁶ *Metcalf*, 21 F.3d at 1142.

proposed action; and none were presented.⁶⁷ The Board did not publicly analyze potential direct, indirect, individual, and cumulative effects of the proposed action on the human environment; and none were presented.⁶⁸ Instead, the Board spent less than five minutes publicly deliberating on the decision to terminate the GPP program.⁶⁹

Because the decision has already been made and largely implemented, the draft EA serves no purpose in informing decision-makers of the potential effects of terminating the GPP program. This NEPA analysis is nothing more than a box for TVA to check, and that type of “[g]rudging, pro forma compliance will not do.”⁷⁰ “NEPA expresses a Congressional determination that procrastination on environmental concerns is no longer acceptable.”⁷¹

Although the official Board Resolution states that the decision was contingent on NEPA review, the record makes clear that the Board itself thought that its decision was final. The Board does not appear to have made any plans to revisit its decision once it had the benefit of NEPA analysis. At the February 2019 Board meeting, at least one Board member thought that the federal entity could terminate the program immediately. After the initial presentation, Director A.D. Frazier asked, “Why don’t we just suspend it now?”⁷² Even the TVA staff member presenting the resolution to the Board failed to note that one reason TVA could not immediately terminate the GPP program was that it had yet to complete the NEPA process. Instead, he responded, “In fairness to the suppliers who have spent the time and effort to develop projects, I think that we should keep a standard, and also, we don’t have a replacement yet. So I think it appropriate to have a replacement program before we end. So effectively this stays in place for the rest of the year before we end that program.”⁷³

Because the Board has decided and made no plans to revisit its decision to terminate the GPP program, the draft EA is nothing more than a post-hoc rationalization of a decision TVA has already made.

⁶⁷ TVA Board Meeting Video at 1:39:57 to 1:44:28; Presentation to the Board at 56–60.

⁶⁸ TVA Board Meeting Video at 1:39:57 to 1:44:28; Presentation to the Board at 56–60.

⁶⁹ TVA Board Meeting Video at 1:39:57 to 1:44:28; Presentation to the Board at 56–60.

⁷⁰ *Churchill County v. Norton*, 276 F.3d 1060, 1072 (9th Cir. 2001).

⁷¹ *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 538 F.3d 1172, 1185 (9th Cir. 2008).

⁷² TVA Board Meeting Video at 1:43:28 to 1:43:50.

⁷³ *Id.*

B. The Board’s premature decision—and TVA’s implementation of it—has limited the range of reasonable alternatives.

After the Board’s premature decision, TVA took immediate steps to implement the termination of the GPP program and has now effectively terminated it beginning January 1, 2020. NEPA regulations explain that prior to finalizing a NEPA review, “no action concerning the proposal shall be taken which would . . . [l]imit the choice of reasonable alternatives.”⁷⁴ Courts have interpreted these regulations to require the preparation of EAs or EISs “before any irreversible and irretrievable commitment of resources.”⁷⁵ TVA’s implementation of the Board’s decision has effectively terminated the GPP program. The utility’s precommitment has artificially limited the range of reasonable alternatives and made the No Action Alternative—maintaining the current GPP program—meaningless. TVA’s actions have made it clear to customers and the solar market in Tennessee that there will be no more GPP program after December 31, 2019.

TVA committed extensive resources through its long-term planning process which unequivocally stated that the GPP program would terminate at the end of 2019. TVA’s IRP addresses “the demand for power in the TVA service area, the resource options available for meeting that demand, and the potential environmental, economic and operating impacts of these options.”⁷⁶ It creates the roadmap for how TVA will serve the Valley for the next twenty years.⁷⁷ In the 2019 IRP, TVA declared that the GPP program would not be a part of that long-term vision. It stated that the Board of Directors approved “the closure of the GPP program to new applicants effective January 1, 2020, and the phasing out of the GPP program completely as existing contracts with participants expire.”⁷⁸ By analyzing its future electricity system assuming the termination of the GPP program in 2019, TVA effectively terminated the GPP program for its own planning purposes. The 2019 IRP made no reference to that decision being contingent on completion of the NEPA process.

⁷⁴ 40 C.F.R. § 1506.1(a).

⁷⁵ *Metcalf*, 214 F.3d at 1143 (holding that contracts awarded prior to the issuance of an EA were an irreversible and irretrievable commitment of resources). *See also Conner v. Burford*, 848 F.2d 1441, 1446 (9th Cir.1988); *Envtl. Def. Fund v. Andrus*, 596 F.2d 848, 852-53 (9th Cir. 1979) (“After major investment of both time and money, it is likely that more environmental harm will be tolerated.”).

⁷⁶ 2019 IRP at 1-1.

⁷⁷ *Id.*

⁷⁸ *Id.* at 2-10.

TVA has also committed resources to spreading the news of the GPP program's demise. For example, TVA has told the solar industry and potential program participants unequivocally that the program is ending:

- **GPP Program Website**—TVA's website for the GPP program states, "[T]he GPP Program will be retired after 2019. The program will close to new applications, including Capacity Increase and Decrease Requests, December 31, 2019, 5 p.m. CST. Those enrolled in the program as of that date will continue in the program through the duration of their contracts."⁷⁹ As of November 5, 2019, the GPP program website contained no implication that this decision has not already been made and made no mention of the draft EA or that the decision was contingent in any way.
- **2019 IRP**—In its response to comments on the 2019 IRP, TVA repeatedly and without condition, stated the GPP program will end after 2019.⁸⁰ None of those statements qualify the program's closure with completion of legally required NEPA analysis. For any member of the public reading the 2019 IRP, TVA made clear that the GPP program was over.
- **Public Forums**—TVA has made those same statements at public events, such as the 2019 Tennessee Valley Solar Conference.

Because of the Board's decision and TVA's implementation of that decision, the range of reasonable alternatives has been limited. Having been told unequivocally that the GPP program is ending December 31, 2019, no reasonable customer is planning to apply for the program in 2020. The process to complete the new construction application process for the GPP program can take up to 420 days, over a year.⁸¹ That means, even if TVA were unable to complete the NEPA process by December 31, 2019, and the GPP program continues to exist in 2020, there would be no GPP program applicants after December 31, 2019, and TVA would have accomplished its goal of terminating the GPP program absent an adequate NEPA analysis. TVA's statements that the GPP program terminates December 31, 2019, means that after February 14, 2019, there has likely been no planning by customers to install solar panels and apply to participate in the GPP program in 2020 or beyond. Because TVA had not gone through the NEPA analysis, customers also had no information about the No Compensation Alternative

⁷⁹ Att. 20, *Green Power Providers*, TVA, <https://www.tva.gov/Energy/Valley-Renewable-Energy/Green-Power-Providers> (last visited Nov. 5, 2019).

⁸⁰ 2019 IRP at F-36 ("will be discontinued after 2019"); *id.* at F-38 (will accept "applicants through the end of 2019"); *id.* at F-39 ("will be closed to new applicants after 2019").

⁸¹ Att. 21, TVA, *The Green Power Providers Lifecycle*.

and had no knowledge as to whether any new program would compensate them for the value of their solar exports.

Therefore, any alternative that would continue the GPP program has now been rendered meaningless. TVA's actions have limited the range of reasonable alternatives available for review in violation of NEPA.

II. TVA's justification of the need to terminate the GPP program and adopt the No Compensation Alternative runs counter to the evidence before it.

TVA sets the stage for the draft EA by providing an arbitrary and capricious justification of the purpose and need for terminating and replacing the GPP program. NEPA documents must "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."⁸² An agency acts arbitrarily and capriciously when it "offer[s] an explanation for its decision that runs counter to the evidence before the agency."⁸³ TVA provides three reasons for the proposed action that are contradicted by the facts and evidence before TVA: (1) customers' lack of interest in the GPP program; (2) purported cost shifting; and (3) an assumption that distributed solar generation would somehow impede utility-scale solar development.⁸⁴

A. TVA's own research found that customers continue to be attracted to programs that compensate customers for their generation of electricity.

TVA suggests that it is necessary to terminate the GPP program and adopt the No Compensation Alternative because the underperformance of the GPP program demonstrates that customers no longer find the GPP program attractive.⁸⁵ However, that conclusion runs counter to TVA's own market research on customer interests in the Valley as well as non-TVA studies on customer interest in solar programs.⁸⁶ Looking at the expansive scope of participation in the GPP program across a diverse group of LPCs throughout the Tennessee Valley, it is apparent that customers are interested in solar generation. (Map 1).

⁸² 40 C.F.R. § 1502.13, 1508(9)(b).

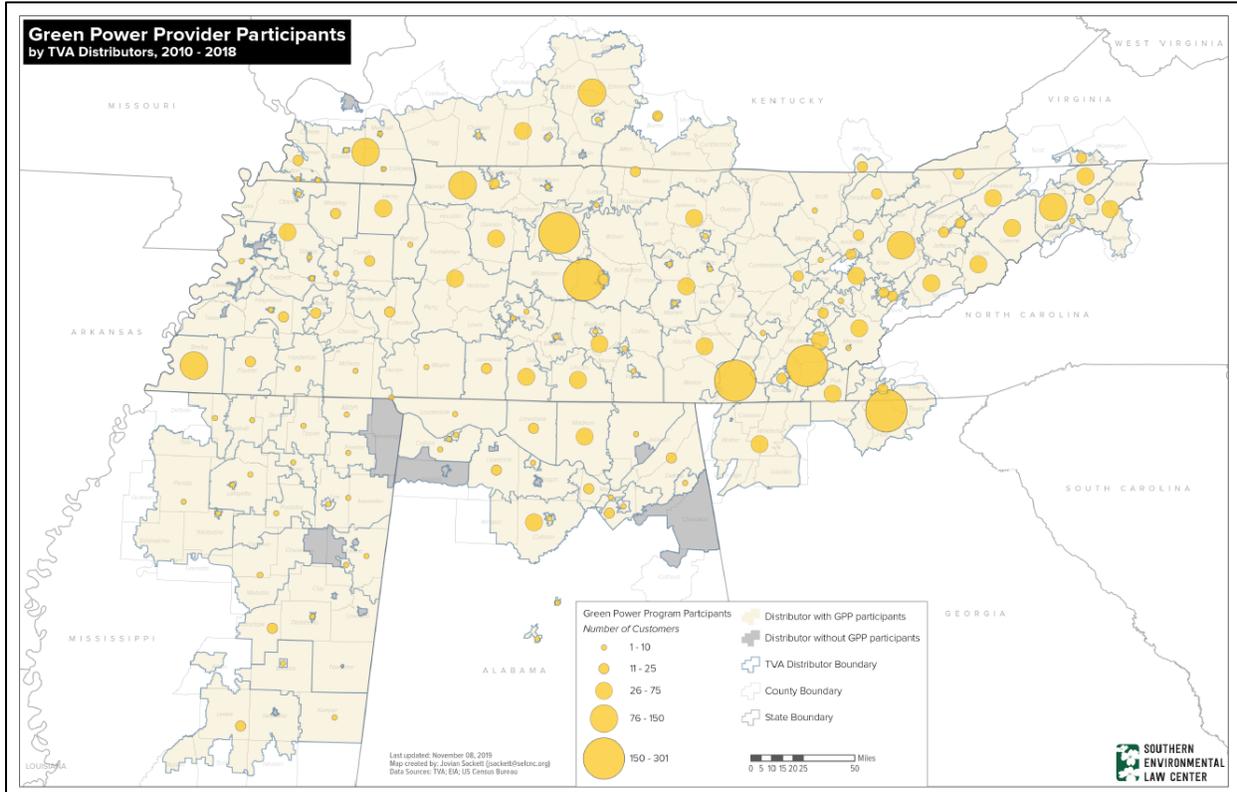
⁸³ *Sherwood v. Tennessee Valley Auth.*, 590 F. App'x 451, 459 (6th Cir. 2014).

⁸⁴ Draft EA at 1.

⁸⁵ *Id.* at 1.

⁸⁶ *Sherwood*, 590 F. App'x at 459.

Map 1. Green Power Provider Participants by TVA Local Distribution Companies, 2010–2018⁸⁷



And as shown in a market study commissioned by TVA, customers in the Valley want access to distributed solar generation, and want to be appropriately compensated for the value that generation provides to the grid.⁸⁸ The market research that TVA relies upon in the draft EA (TVA’s Market Research) demonstrates that Valley customers (1) are more likely to participate in the GPP program than any other concept program presented by TVA; (2) have opinions consistent with nation-wide customer studies that similarly show customer attraction to programs that compensate DER generation; and (3) agree that the time it takes to pay back the costs of installing solar panels (i.e., the payback period) influences their interest in installing solar panels. Despite that evidence, TVA relies on the recent poor performance of the GPP program to justify its preference for the No Compensation Alternative.

First, TVA’s Market Research exploring potential solar programs—the Homeowner’s Section—affirms Valley customers’ continued interest in a program that compensates solar generation. This study consisted of a qualitative concept laboratory to generate four potential

⁸⁷ GPP Map.

⁸⁸ Att. 22, Kelsey Misbrener, *Poll Finds 81% of Tennessee Voters Want More Solar in the State*, Solar Power World, Dec. 6, 2017, <https://www.solarpowerworldonline.com/2017/12/tennessee-voters-support-solar>. [hereinafter “2017 TN Voter Poll”].

concepts as well as a control concept (the GPP program). The customers who participated in concept development were homeowners with incomes \$75,000+ who “definitely would” or “probably would” consider solar panels.⁸⁹ The concepts created by the Group include:

- **Concept G (GPP, Control):** (1) a buy-all, sell-all program with a twenty-year contract where “[i]f you generate enough power, they could even pay you more than you pay them.”⁹⁰
- **Concept C (Confidence, TVA’s preferred replacement program):** (1) a list of qualified contractors and (2) support services from the customers LPC and TVA.⁹¹
- **Concept M (Understand Money):** (1) an online calculator to estimate payments; (2) information on financing plans; (3) a meter inside the home showing energy consumption power by solar panels versus traditional electric supply; and (4) billing that clearly shows monthly savings from solar generation.⁹²
- **Concept R (Responsibility):** (1) a meter inside the home showing energy consumption power by solar panels versus traditional electric supply; (2) billing that clearly shows monthly savings from solar generation; and (3) a regular update on the environmental impact avoided via solar power.⁹³
- **Concept S (Get Started with Solar):** (1) an onsite evaluation; (2) education on the best type and size of solar power system; (3) a list of steps to get started with solar; (4) an online calculator to estimate payments.⁹⁴

Only the GPP control concept includes financial compensation for customers’ export of electricity generated using distributed solar.⁹⁵ No retail net metering alternative was presented.⁹⁶

Each concept was tested a different group 200 Valley residents who were homeowners with a household income > \$50,000 and without solar panels on their home.⁹⁷ The study’s results show that the GPP program outperformed all other concepts in terms of customers’ interest in

⁸⁹ TVA Market Research at 25.

⁹⁰ *Id.* at 26.

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.* at 34.

participating in the program.⁹⁸ (Table 4). The study recognizes that TVA is “likely to have **fewer participants** with ‘Concept C—Confidence’ versus ‘Control—Concept G.’”⁹⁹ Therefore, the Homeowners study contradicts TVA’s purported reason for terminating the GPP program and adopting the No Compensation Alternative: customers are more interested in the GPP program than they are in TVA’s preferred replacement. The benchmarking portion of TVA’s Market Research—which provides an overview of programs and customer opinions across the Nation—similarly demonstrates that customers are interested in solar programs that compensate them for the true value of solar, thereby reducing payback periods.¹⁰⁰

Table 4. Customer Interest in Participating in Concept Programs¹⁰¹

Concept	Intent to Participate	Likelihood to Recommend
GPP Control	67%	67%
Responsibility	65%	63%
Starting with Solar	60%	58%
Understand Money	59%	61%
Confidence	54%	56%

Second, independent studies show that customers are attracted to programs that compensate them for the value they provide to the grid and the Valley through DER. For example, a poll completed in October 2017 found that 81% of Tennessee voters want to see more solar in Tennessee, with 88% wanting it on their own home.¹⁰² Plenty of other polls have similarly showed that customers want more solar generation.¹⁰³ Therefore, the evidence TVA considered in independent customer research contradicts TVA’s conclusion that Valley residents are not interested in a program to compensate them for solar generation.

Third, TVA’s Market Research shows that customers overwhelmingly believe that a shorter payback period would make it more likely for them to install solar panels. The “Pricing Study” focused on customer interest in incentives programs. It presented 200 Valley residents

⁹⁸ *Id.* at 64, 67, 70, 73, 76.

⁹⁹ *Id.* at 35 (emphasis in original).

¹⁰⁰ *Id.* at 13.

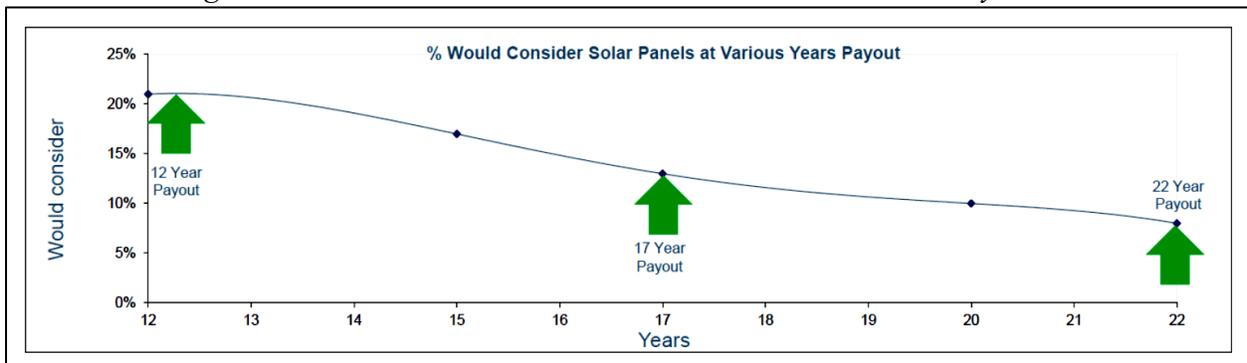
¹⁰¹ *Id.* at 64, 67, 70, 73, 76.

¹⁰² 2017 TN Voter Poll.

¹⁰³ Att. 23, Joseph Zeballos-Roig & Angela Wang, *Americans Really Want the US to Adopt Renewable Energy Like Wind and Solar, While Rejecting Fossil Fuels Like Coal*, Business Insider, Oct. 1, 2019, <https://www.businessinsider.com/americans-really-want-the-us-adopt-renewable-energy-sources-2019-10>; Att. 24, Solar Energy Industries Ass’n, *Solar Power: Becoming America’s Energy* (2018), <https://www.seia.org/sites/default/files/2018-09/SEIA-GSG-Solar-Messaging-Survey-2018.pdf>; Att. 25, Lazard, *Growing Percentage of U.S. Voters Favor Increased Commitment to Alternative Energy* (2016), <https://www.lazard.com/media/2489/2016-alternative-energy-poll-release.pdf>; Att. 26, Hart Research Associates, *Public Opinion on US Energy and Environmental Policy*, Center for American Progress (2014), https://cdn.americanprogress.org/wp-content/uploads/2015/01/Public-Opinion-on-US-Energy-and-Environmental-Policy_slides.pdf; Att. 27, Zac Auter, *In U.S., 73% Now Prioritize Alternative Energy over Oil, Gas*, Gallup, Mar. 24, 2016, https://news.gallup.com/poll/190268/prioritize-alternative-energy-oil-gas.aspx?g_source=CATEGORY_ENVIRONMENT_AND_ENERGY&g_medium=topic&g_campaign=tiles

with a program that would increase monthly energy savings and allow them to expedite reimbursement for the installation costs for rooftop solar panels.¹⁰⁴ The variable for the program was the number of years it would take to pay back the costs of installing solar panels: 12, 15, 17 (the current GPP program), 20, or 22 (without the current GPP program).¹⁰⁵ The results demonstrate that participants were more interested in solar with a 17-year payback period than a 22-year payback period; and even more participants were interested in solar with a 12- or 15-year payback period.¹⁰⁶ (Figure 5). In short, Valley customers are more interested in installing solar when their payback period is shorter. The research concluded that in terms of installing solar panels, “the biggest obstacles to customers” are cost, time, and lack of savings.¹⁰⁷ Because payback periods are shortened by programs that compensate customers for generating electricity with their solar panels—like retail net metering—those programs would be of interest to Valley customers according to the research before TVA. Therefore, the Pricing Study further contradicts TVA’s purported need to terminate rather improve upon the GPP program.

Figure 5. % Would Consider Solar Panels at Various Years Payout¹⁰⁸



In the face of this overwhelming evidence of customer interest, TVA instead looks to the recent poor performance of the GPP program to justify its actions. However, TVA fails to acknowledge that the recent low participation rates in the GPP program are due more to its faulty design than customer choice.

Even at inception, the GPP program was flawed. Although the GPP program at least initially provided one-time incentive payments and premium rates—which helped to compensate customers for the value of solar generation and also helped reduce payback periods for solar panels—it also established buy-all, sell-all program that does not allow customers to reduce their

¹⁰⁴ TVA Market Research, at 4.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* at 7.

¹⁰⁷ *Id.* at 8.

¹⁰⁸ *Id.* at 7.

energy consumption by generating their own power.¹⁰⁹ As TVA recognizes, end users prefer a retail net metering system where customers would use the electricity that their system generates.¹¹⁰ Additionally, under the GPP program, TVA keeps the renewable energy credits (RECs) generated through the customer's solar panels, so the customer does not get the benefit of the clean energy they generate unless they re-purchase those RECs at a premium from TVA through another program.¹¹¹ The GPP program has also been capped at 10 MW nameplate capacity per year, and was recently reduced to 7.5 MW per year (a drop in the bucket compared to TVA's total capacity, around 35,000 MW summer net dependable capacity).¹¹² The GPP program has not been well-advertised, as shown by TVA's Market Research which showed that 58% of study participants had not seen or heard of the GPP program.¹¹³

In addition to these programmatic flaws, TVA began gutting the incentives for the program in 2014 when it cut the premium rate for solar generation by more than half.¹¹⁴ In 2015, TVA cut the one-time incentive payments from the program.¹¹⁵ Then in 2016, it cut the compensation rates paid for solar generation provided to the grid.¹¹⁶ In 2018, TVA stopped paying even the retail compensation rates for solar generation, resulting in some jurisdictions where the GPP program rate is lower than retail rates—i.e., customers lose money through the GPP program, and TVA profits from solar generation provided by GPP program participants.¹¹⁷ These program changes directly correspond to the downward trajectory of GPP program participants. (Table 5; Figure 6–7). TVA itself recognizes the likelihood that the “GPP value proposition and process [will] become less attractive and is aligned with [end use customers’] expectations.”¹¹⁸ Thus, to the extent the GPP program is failing, it is due to TVA's design choices and program changes, rather than customer choice.

¹⁰⁹ Draft EA at 9.

¹¹⁰ *Id.* at 2.

¹¹¹ *Id.* at 10; *Green Power Switch*, TVA, <https://www.tva.com/Energy/Valley-Renewable-Energy/Green-Power-Switch> (last visited Nov. 6, 2019).

¹¹² Draft EA at 9; 2019 IRP at 4-11.

¹¹³ TVA Market Research at 10.

¹¹⁴ Draft EA at 9.

¹¹⁵ *Id.*

¹¹⁶ *Id.*

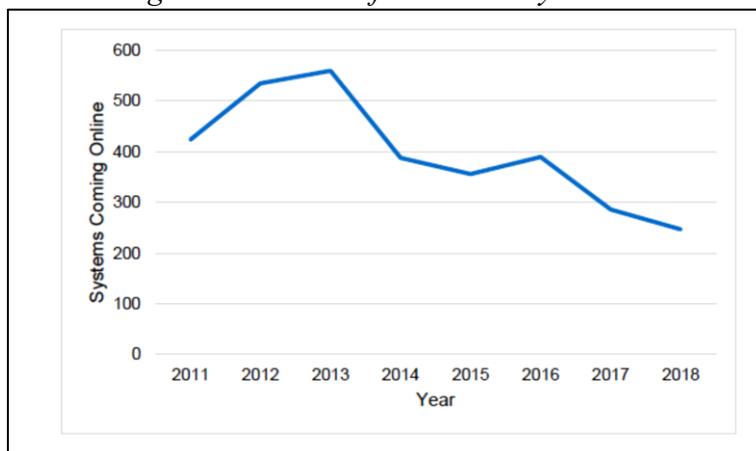
¹¹⁷ *Id.* at 2.

¹¹⁸ *Id.* at 1.

Table 5. GPP Payment Structure¹¹⁹

Year	Generation Credit Rate	One-Time Incentive Payment (\$)	Premium Rate (Solar) (\$/kWh)	Premium Rate (Wind, Biomass, Hydro) (\$/kWh)	Capacity Limit (MW)
2012	Retail	1,000	0.12	0–0.03	10
2013	Retail	1,000	0.09	0.03	10
2014	Retail	1,000	0.04	0.03	10
2015	Retail	0	0.02	0.02	10
2016	Retail	0	0	0	10
2017	Retail	0	0	0	10
2018	Residential (<10 kW): \$0.09/kWh Commercial, Industrial, and Residential (>10 kWh): \$0.075/kWh	0	0	0	10
2019	Residential (<10 kW): \$0.09/kWh Commercial, Industrial, and Residential (>10 kWh): \$0.075/kWh	0	0	0	7.5

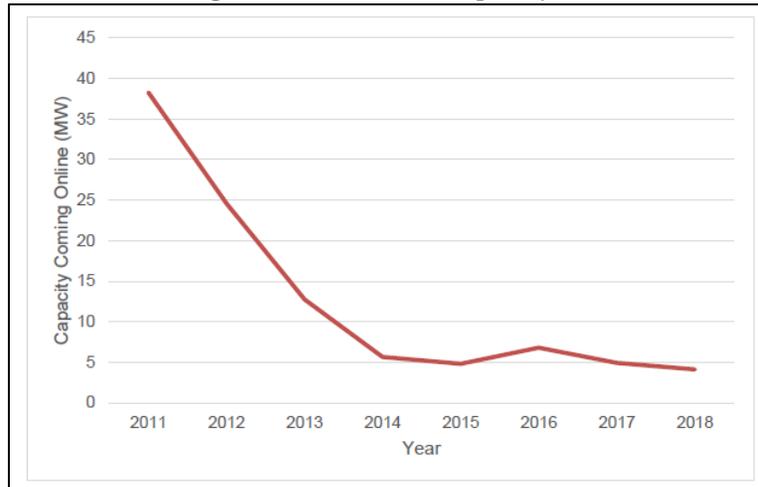
Figure 6. Number of New GPP Systems¹²⁰



¹¹⁹ *Id.* at 9. Citizen Groups do not agree with TVA’s characterization of the rate it has paid under the GPP program as a premium.

¹²⁰ *Id.* at 7.

Figure 7. New GPP Capacity.¹²¹



Therefore, the evidence before TVA shows that customers are still interested in a program that properly compensates distributed solar generation—and they appear to be interested even in the flawed GPP program. TVA’s unsupported conclusion to the contrary artificially constrained the range of reasonable alternatives in the draft EA.¹²²

B. Cost-shifting is not occurring in the Valley, and TVA fails to show that it would, even at high levels of participation.

TVA concludes that cost shifting serves as a satisfactory reason for terminating the GPP program and replacing it with the No Compensation Alternative, despite the contrary evidence before TVA.¹²³ TVA failed to show that cost-shifting is occurring, nor is it likely that it would even at high levels of participation. In fact, TVA acknowledges in its alternatives analysis, flawed as it is, there would be only “minor” cost-shifting effects. At its core, the cost-shifting argument fails to acknowledge the full value that solar generation provides to the grid and the Valley.

First, TVA cites no data to support its conclusion that cost-shifting is occurring, instead citing its own 2018 Rate Change EA which is currently being challenged as inadequate in part because of its baseless conclusions about cost shifting.¹²⁴ The cost shifting theory has been rebutted by the U.S. Department of Energy’s Lawrence Berkeley National Laboratory, which

¹²¹ *Id.* at 8.

¹²² *Sherwood*, 590 F. App’x at 459.

¹²³ *Id.*

¹²⁴ Att. 28, Complaint, *Center for Biological Diversity v. Tenn. Valley Auth.*, No. 3:18-CV-1446-LCB (N.D. Al. Sept. 6, 2018); Att. 29, Memorandum Opinion and Order, *Center for Biological Diversity v. Tenn. Valley Auth.*, No. 3:18-CV-1446-LCB (N.D. Al. Aug. 26, 2019).

found that for the “vast majority of states and utilities, the effects of distributed solar on retail electricity prices will likely be negligible for the foreseeable future.”¹²⁵

Second, it is not likely that TVA could show that cost shifting is occurring in the Valley given TVA’s low distributed solar penetration rates—0.2% capacity.¹²⁶ As noted by the Regulatory Assistance Project (RAP), “[a]t low levels of installation of distributed renewables (e.g., under five percent of customers), few if any physical modifications are required to electric distribution systems.”¹²⁷ RAP then goes on to cite the real-world experience of Hawaii, where, with 11% “PV saturation,” the Hawaiian Electric Company is only just now in a situation where it feels the need to invest in distribution system modifications to accommodate that solar generation.¹²⁸ A study by the U.S. Department of Energy’s Lawrence Berkeley National Laboratories from 2017 similarly found that even at rooftop solar penetration levels of 10%, any potential cost shift could be 5% in either direction.¹²⁹ TVA is nowhere near such levels of DER in its system, and accordingly its proposed “solution” again appears to be in search of a problem.

Third, TVA acknowledges in the draft EA that even its flawed assumptions point to only “minor” purported cost-shifting effects.¹³⁰ TVA considered the total purported cost-shifting effect as “a minor negative impact.”¹³¹ Even under TVA’s projections about purported cost-shifting, the difference in electricity bills would constitute \$1.02–2.92 *per year*.¹³² Contrast that to the up to \$2.00 *per month* bill increases that TVA estimated would result from its 2018 Rate Change.¹³³ In other words, one of TVA’s purported solutions to the cost-shifting problem will have a larger effect on non-DER customers and low-income end users than the so-called problem. And as we have shown, there is no cost-shifting problem to begin with.

Fourth, cost-shifting is based on a flawed assumption that fails to acknowledge the value that solar provides to the grid. The argument’s premise is that compensation paid to customers

¹²⁵ Lawrence Berkeley National Laboratory, Putting the Potential Rate Impacts of Distributed Solar into Context, at 29 (Jan. 2017), <https://emp.lbl.gov/publications/putting-potential-rate-impacts>.

¹²⁶ Draft EA at 29.

¹²⁷ Lazar, J. and Gonzalez, W. (2015), Smart Rate Design for a Smart Future, Regulatory Assistance Project, at 7, <http://www.raponline.org/document/download/id/7680>.

¹²⁸ *Id.*

¹²⁹ See Barbose, G., *Putting the Potential Rate Impacts of Distributed Solar into Context* (2017), <https://emp.lbl.gov/sites/all/files/lbnl-1007060-es.pdf> (“At current penetration levels (0.4% of total U.S. retail electricity sales), distributed solar likely entails no more than a 0.03 cent/kWh longrun increase in U.S. average retail electricity prices, and far smaller than that for most utilities. Even at projected penetration levels in 2030, distributed solar would likely yield no more than roughly a 0.2 cent/kWh (in 2015\$) increase in U.S. average retail electricity prices, and less than a 0.1 cent/kWh increase in most states, where distributed solar penetration is projected to remain below 1% of electricity sales.”)

¹³⁰ Draft EA at 46.

¹³¹ *Id.*

¹³² *Id.*

¹³³ 2018 Rate Change EA at 41.

generating electricity with DER unfairly transfers costs to those customers without DER by reducing the number of participants paying for maintenance of the grid. Meta-analyses have shown that electricity generated by solar panels is worth more than the rates at which that generation is compensated.¹³⁴ Similarly, Maine calculated the value of solar using a robust cost-benefit analysis and found that the value of solar was more than twice the retail rate for electricity.¹³⁵ Moreover, studies that have found lower values for electricity generated by solar “often exclude consideration of key benefits that solar panels provide to the grid and society.”¹³⁶ Even considering only the benefit that distributed solar provides in terms of marginal avoided energy costs, TVA is not properly compensating solar generation, so it seems implausible that cost shifting are happening.¹³⁷ Overall, research shows that TVA is not subsidizing distributed solar, but in fact distributed solar is subsidizing TVA.

The evidence before TVA shows that cost-shifting is not occurring, particularly not to any extent that would justify the No Compensation Alternative. TVA’s conclusion to the contrary is arbitrary and capricious.

C. Low-cost utility-scale solar has no bearing on the value of supporting distributed solar.

TVA’s determination that it needs to terminate the GPP program and replace it with the No Compensation Alternative due to the availability of low cost of utility-scale generation is also contrary to the evidence before the agency. Utility-scale and distributed solar are complementary resources that help promote a diverse, flexible, and resilient grid. Moreover, TVA cannot disincentivize distributed solar based on low-cost utility scale solar when TVA has failed to make a commitment to utilize it.

First, there is no reason that utility-scale solar cannot be installed in addition to distributed solar, and TVA provides none. Instead, both categories of solar generation provide independent benefits to the grid. Utility-scale solar, particularly when paired with storage, can provide baseload power generation that can offset the need to construct new natural gas combined cycle units. That is seen in the 2019 IRP results, where modeling runs that accelerated

¹³⁴ Att. 30, Gideon Weissman & Bret Fanshaw, *Shining Rewards: The Value of Rooftop Solar Power for Consumers and Society*, Frontier Group and Environment America Research and Policy Center, at 11, (Oct. 2016), <https://frontiergroup.org/sites/default/files/reports/Frontier%20Group%20-%20Shining%20Rewards%202016.pdf> [hereinafter “Shining Rewards”]; Att. 31, Mark Muro & Devashree Saha, *Rooftop Solar: Net Metering is a Net Benefit*, Brookings Institute (May 23, 2016) <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit> [hereinafter “Brooking Report”].

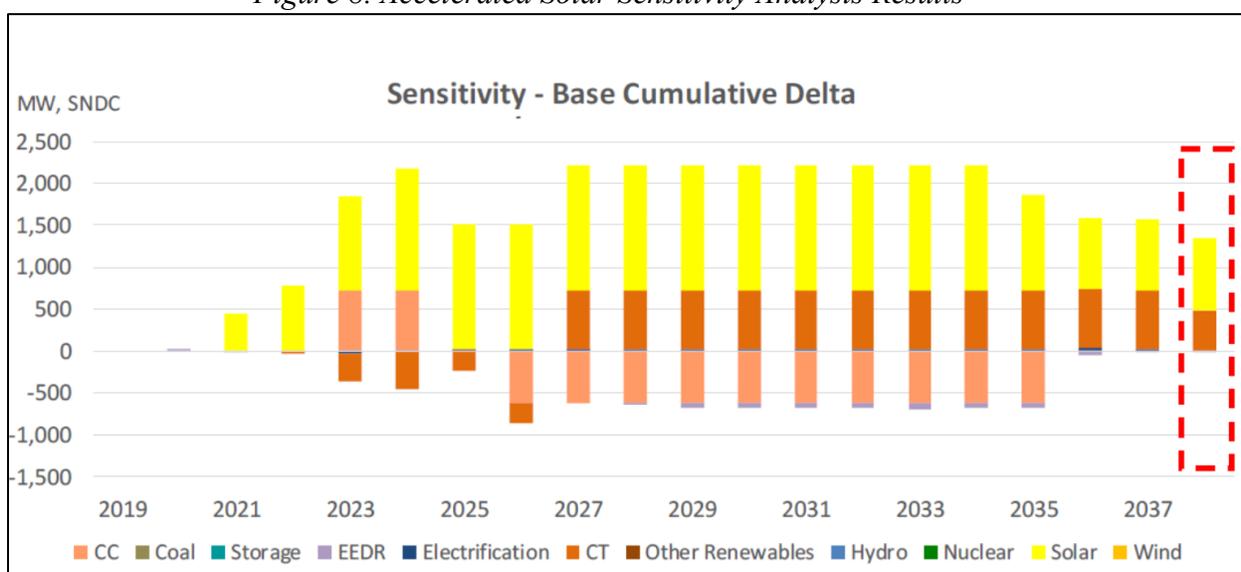
¹³⁵ Maine Value of Solar at 6.

¹³⁶ Shining Rewards at 11.

¹³⁷ Comments, Factual Background, Section I.

solar additions showed displacement of natural gas generation.¹³⁸ (Figures 8–9). Distributed solar, on the other hand, provides values for resiliency and customer choice, in addition to those values discussed in detail above.¹³⁹ Distributed solar can similarly assist in peak shaving once it penetrates the market.¹⁴⁰ As the National Association of Regulated Utility Commissioners (NARUC) found, distributed solar provide important resiliency benefits because it can operate during electrical outages, provide emergency power to facilities, as well as provide electricity under normal conditions.¹⁴¹ As such, several states are specifically focusing on resilient distributed solar as part of clean energy programs or grid modernization efforts.¹⁴² Therefore, utility-scale and distributed solar are complementary, not antithetical resources.

Figure 8. Accelerated Solar Sensitivity Analysis Results¹⁴³



¹³⁸ Att. 32, TVA, 2019 IRP Working Group Meeting 12: March 27–28, 2019, at 47 (2019) [hereinafter “IRP Working Group Meeting 12”].

¹³⁹ Comments, Factual Background, Section I.

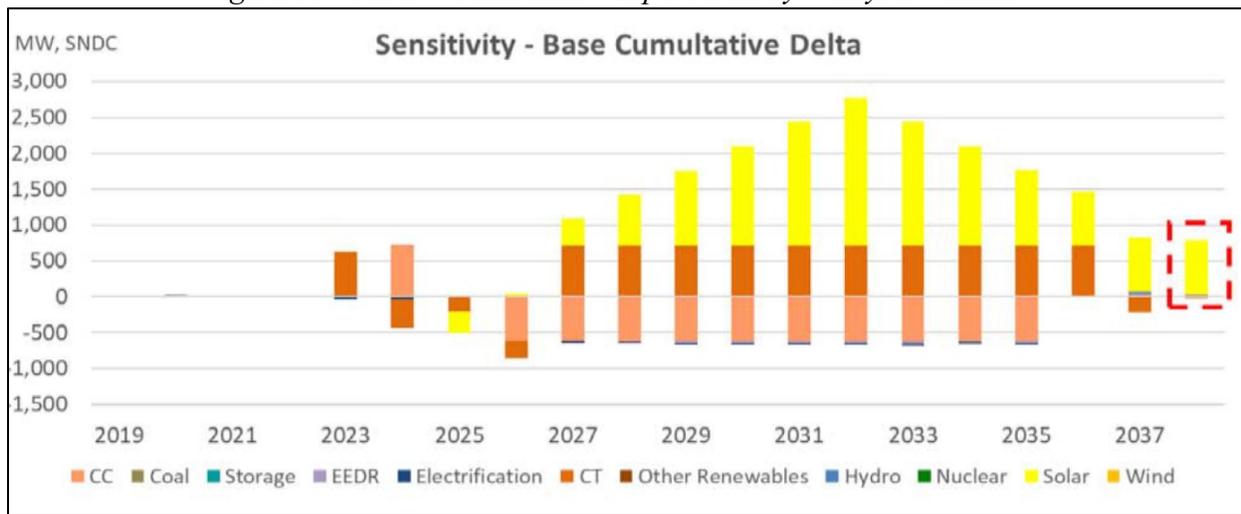
¹⁴⁰ *Id.*

¹⁴¹ Att. 33, National Association of Regulatory Utility Commissioners, *The Value of Resilience for Distributed Energy Resources: An Overview of Current Analytical Practices* 6–9 (Apr. 2019), <https://pubs.naruc.org/pub/531AD059-9CC0-BAF6-127B-99BCB5F02198>

¹⁴² *Id.* at 9.

¹⁴³ IRP Working Group Meeting 12 at 47.

Figure 9. Double Annual Solar Cap Sensitivity Analysis Results¹⁴⁴



Second, TVA’s reliance on low-cost utility-scale solar is a red herring because TVA has not committed to expansive utility-scale solar development. TVA currently owns 14 small solar installations with a total capacity of 1.4 MW.¹⁴⁵ TVA also has long-term power contracts totaling 370 MW of nameplate capacity for utility-scale solar.¹⁴⁶ In response to Facebook and Google demands, TVA has agreed to provide renewable power to the tech giants’ data centers.¹⁴⁷ In 2019, TVA issued a request for proposals (RFP) for procurement of 200 MW of new renewable resources.¹⁴⁸ Aside from those commitments, TVA has made no major commitment to build or buy utility-scale solar. The 2019 IRP shows a range of 2,500–14,000 MW of solar additions by 2038.¹⁴⁹ However, the IRP only vaguely directs TVA to “[a]dd solar based on economics and to meet customer demand.”¹⁵⁰ That nebulous guidance does not constitute commitment for TVA to invest in utility-scale solar, and given TVA’s recent history of investing in natural gas and nuclear, there are no guarantees that TVA would do so.

The evidence before TVA is contrary to its conclusion that the availability of low-cost utility scale solar somehow requires termination of the GPP program and adoption of the No Compensation Alternative.

¹⁴⁴ *Id.* at 49.

¹⁴⁵ 2019 IRP EIS at 2-8.

¹⁴⁶ 2019 IRP at 5-4 to 5-5.

¹⁴⁷ Att. 34, Shalina Chatlani, *TVA Facebook Contract Shows Solar Growth, But Environmentalists Say There’s a Catch*, NPR, Nov. 12, 2018, <https://www.nashvillepublicradio.org/post/tva-facebook-contract-shows-solar-growth-environmentalists-say-theres-catch#stream/0>; Att. 35, Jim Gaines, *TVA Announces Solar Farms to Serve Google Data Centers*, KnoxNews, Jan. 16, 2019, <https://www.knoxnews.com/story/money/business/2019/01/16/tva-solar-farms-google-data-centers/2595383002>.

¹⁴⁸ 2019 IRP EIS at 2-11.

¹⁴⁹ 2019 IRP at 9-3.

¹⁵⁰ *Id.* at 10-2.

III. TVA must consider a reasonable range of alternatives to replace the GPP program prior to moving forward with its plans to adopt the No Compensation Alternative.

TVA’s analysis of three alternatives—the No Action, No Replacement, and No Compensation Alternatives—fails to consider an adequate range of reasonable alternatives. Alternatives analysis is the heart of the NEPA process.¹⁵¹ Federal entities must “[r]igorously explore” and “objectively evaluate all reasonable alternatives.”¹⁵² Despite this clear mandate, TVA failed to consider any alternatives that would adequately compensate solar exports for the value they contribute to the grid and the Valley. TVA must also at a minimum consider the following alternatives: (1) retail net metering; and (2) the “Promote DER” strategy developed by TVA in its 2019 IRP. As explained below, based on existing data and TVA’s own studies, these alternatives are reasonable. Unless TVA considers an adequate range of reasonable alternatives, it cannot satisfy the “hard look” requirement.¹⁵³

A. Retail net metering is a nationally recognized program that would be a reasonable replacement for the GPP program.

Retail net metering is a well-accepted solar compensation program that TVA should consider as a reasonable alternative to the GPP program. Retail net metering allows a customer with DER (like solar panels) to use the power generated by their DER to offset the electricity they use from their local power company during the applicable billing period, thus reducing their electricity bills. To the extent they generate more power than they use, they export that energy to the grid and may obtain credits to use towards future bills or may be directly compensated for that electricity. TVA should include retail net metering as an alternative because (1) it is a well-accepted, feasible program; (2) TVA has considered it a reasonable alternative to the GPP program in the past; (3) it would correspond to the interests of Valley customers; and (4) it would more accurately reflect the value of solar to the grid and the Valley.

First, retail net metering is a well-accepted program that has been adopted across the country.¹⁵⁴ (Figure 10). Thirty-nine states, the District of Columbia, and four U.S. territories have mandatory net metering policies.¹⁵⁵ TVA’s Market Research also includes retail net

¹⁵¹ 40 C.F.R. § 1502.14.

¹⁵² *Id.* § 1502.14(a); *id.* § 1508.9. *Accord* 42 U.S.C. § 4332(E). *See Soda Mountain Wilderness Council v. Norton*, 424 F. Supp. 2d 1241, 1263–64 (E.D. Ca. 2006) (applying this requirement to EAs).

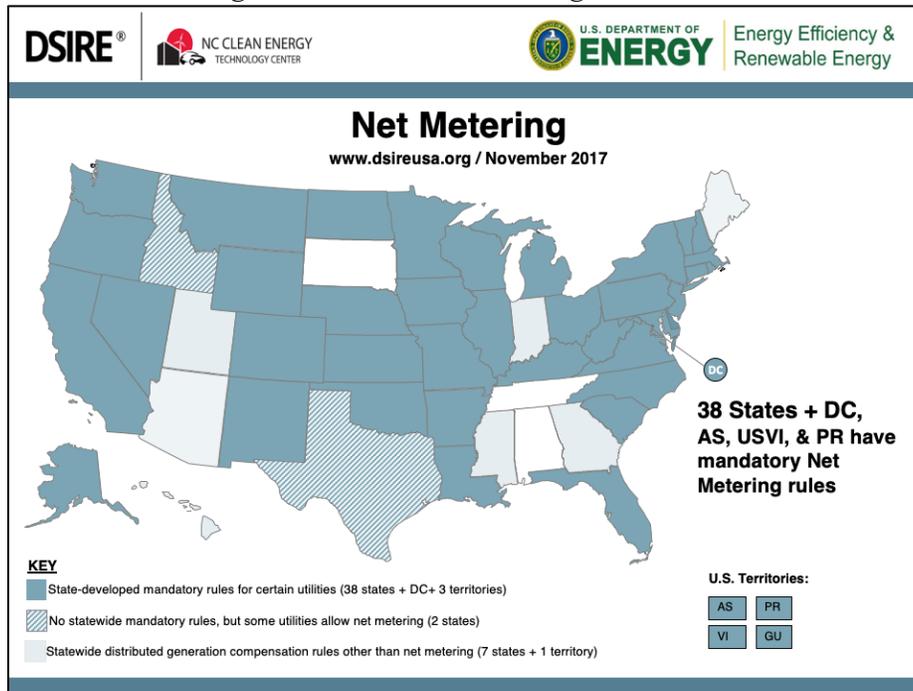
¹⁵³ *Soda Mountain*, 424 F. Supp. 2d at 1263–64.

¹⁵⁴ Att. 36, *Net Metering Map*, N.C. Clean Energy Technology Center DSIRE (Oct. 2019), http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2019/10/DSIRE_Net_Metering_Oct2019.pdf [hereinafter “DSIRE Net Metering Map”].

¹⁵⁵ *Id.*

metering programs as benchmarks from other utilities.¹⁵⁶ However, TVA failed to test a proposed concept and consider a proposed alternative that embodies retail net metering.¹⁵⁷

Figure 10. State Net Metering Policies¹⁵⁸



Second, TVA itself previously found that the GPP program was an appropriate replacement for retail net metering. If TVA considered the GPP program equivalent to retail net metering, it must also consider retail net metering equivalent to the GPP program. In the Energy Policy Act of 2005, Congress amended the Public Utility Regulatory Policies Act and required electric utilities to consider adopting retail net metering.¹⁵⁹ In 2007, TVA considered adopting retail net metering, and ultimately decided that the GPP program was an appropriate substitution.¹⁶⁰

Third, TVA's Market Study shows that customers in the Valley want a retail net metering program where they can use distributed solar generation to offset their energy bills and protect

¹⁵⁶ TVA Market Research at 18.

¹⁵⁷ *Id.* at 26.

¹⁵⁸ DSIRE Net Metering Map.

¹⁵⁹ 16 U.S.C. § 2621(d)(11).

¹⁶⁰ Att. 37, Tenn. Valley Auth., Notice of Determinations on the PURPA Standards Set Forth in the Energy Policy Act of 2005, 72 Fed. Reg. 44,910, 44,911 (Aug. 9, 2007). At that time, TVA in part stated that net metering would be complicated given its service contracts, but as explained above, TVA has proposed and signed updated service contracts that provide LPCs flexibility to meet their demand up to 3–5% of the LPC's load, which would allow for retail net metering. TVA Long-Term Contract; SACE Comments on Long-Term Contracts; Energy Policy Institute Article; Flessner Article.

the environment.¹⁶¹ In TVA’s Market Research—the Pricing Study—participants emphasized that the opportunity to reduce their monthly electric bill plays a big role in their decision whether to install solar panels.¹⁶² When the Homeowner group were asked how a solar program would work, the answers paralleled a retail net metering program: (1) “My electric bill would only include the extra power that I had to buy from the local power company”; (2) “The local power company would buy any extra power that I generated and didn’t need at my home”; (3) “Solar panels would reduce my electric bill by more than half”; (4) “Solar panels could eliminate my electric bill.”¹⁶³ The answer given the least was, “I would sell all of the solar power I generate to the local power company, and buy all the power I use from them.”¹⁶⁴ Therefore, retail net metering is significantly closer to customers’ expectations about how a solar program would work than the GPP program.

Fourth, retail net metering would more accurately reflect the substantial value that distributed solar generation provides to the grid and the Valley. Other utilities have conducted robust analyses to find that solar generation provides a value to the grid that is twice the retail electricity rate as discussed above.¹⁶⁵ And TVA’s own DG-IV methodology, though flawed, found that distributed solar would provide substantial value to the grid and the Valley.¹⁶⁶ As explained above and throughout this letter, distributed solar provides significant value in addition to marginal avoided energy. However, even looking solely at distributed solar’s marginal avoided energy benefit, distributed solar provides substantial value to the grid and the Valley. The full value of distributed solar could more adequately be captured by retail net metering.¹⁶⁷

Finally, retail net metering is reasonably related to the purported purposes and needs articulated in the draft EA, to the extent they are valid. As just explained, Valley customers want retail net metering, therefore a net metering program would comport with customer interests. Retail net metering would also prevent any possible cost-shifting because it allows customers with solar panels to provide a net benefit to all customers.¹⁶⁸ And, distributed solar generation does not block development of utility-scale solar units.¹⁶⁹

In sum, retail net metering is a nationally accepted approach to distributed solar generation that TVA has previously considered an alternative to the GPP program. Retail net

¹⁶¹ TVA Market Research at 14.

¹⁶² *Id.* at 8.

¹⁶³ *Id.* at 46.

¹⁶⁴ *Id.*

¹⁶⁵ Comments, Factual Background, Section I

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ Comments, The Draft Environmental Assessment, Section II.C.

metering would satisfy the purported purpose and needs of the draft EA, to the extent they are valid. It must be considered as a reasonable alternative.

B. TVA must consider the Promote DER strategy that TVA developed as part of the 2019 IRP.

The draft EA ignores an alternative that TVA has already considered a reasonable alternative in the separate NEPA process for the 2019 IRP. In the Promote DER strategy, energy efficiency, demand response, distributed generation, and storage are incentivized and low-income energy efficiency programs are included at assumed levels.¹⁷⁰ Distributed solar and combined heat and power were incentivized to a “high” level—meaning an incentive of 100% marginal energy cost.¹⁷¹ Energy efficiency, and demand response were incentivized to a “moderate” level—meaning an incentive of 50% of marginal energy cost.¹⁷² Distributed storage was incentivized to a moderate level—meaning distributed storage was matched 10% of distributed solar capacity.¹⁷³

The results for the scorecard metrics TVA uses to assess potential strategies demonstrate that Promote DER is competitive with and in some ways outperformed the Base Case.¹⁷⁴ Under the Current Outlook, for example, Promote DER slightly outperforms the Base Case in terms of CO₂ emissions, CO₂ intensity, water consumption, waste production, land use, flexibility resource coverage ratio, present value of revenue requirements, and system average cost.¹⁷⁵ The only metric by which the Base Case performs better by more than a negligible margin is total resource cost.¹⁷⁶ However, as the Southern Environmental Law Center explained in its comments on the draft IRP, that metric is not directly relevant to determining the “lowest system cost,” and, in any event, does not accurately reflect the economics of DER for participants.¹⁷⁷ After correcting this and other errors, the Promote DER strategy would likely be even more competitive than currently projected.

Moreover, the Promote DER strategy is reasonably related to purported needs and purposes of the draft EA, to the extent they are valid. As explained above, Valley customers want a program where they can be compensated for their solar generation. This strategy would

¹⁷⁰ 2019 IRP at F-2.

¹⁷¹ *Id.* at F-2, C-3.

¹⁷² *Id.*

¹⁷³ *Id.*

¹⁷⁴ The Base Case represents business as usual, with no additional incentives beyond continuation of existing programs. IRP at F-2.

¹⁷⁵ *Id.* at 7-18 to 7-19.

¹⁷⁶ *Id.*

¹⁷⁷ SELC et al. 2019 IRP Comments.

satisfy that need.¹⁷⁸ We also note that TVA failed to test a proposed concept that specifically included the Promote DER strategy's characteristics.¹⁷⁹ Distributed solar generation provides value to the grid that would offset any purported cost shifting.¹⁸⁰ And distributed solar generation does not block development of utility-scale solar units.¹⁸¹

Because TVA created the Promote DER strategy and found it reasonable in the context of the 2019 IRP, and because the Promote DER strategy satisfies the purported needs and purposes of the draft EA, TVA must consider it as a reasonable alternative to the GPP program.

IV. TVA failed to take a hard look at the direct, indirect, individual, and cumulative effects of an adequate range of reasonable alternatives.

TVA failed to take the requisite hard look at the environmental consequences of its No Action, No Replacement, and No Compensation Alternatives.¹⁸² The alternative analysis requires disclosure and examination of direct and indirect individual and cumulative effects.¹⁸³ Direct effects “are caused by the action and occur at the same time and place.”¹⁸⁴ Indirect effects “are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”¹⁸⁵ “Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.”¹⁸⁶ TVA's analysis fails to take a hard look at those effects because TVA (1) concluded that the effects the considered alternatives would have minimal effects on cost shifting; (2) concluded that the preferred alternative would not have significant effects on the environment; (3) failed to consider cumulative impacts; and (4) excluded analysis of the effect the proposed alternatives would have on greenhouse gas emissions and climate change.

¹⁷⁸ Comments, The Draft Environmental Assessment, Section II.A.

¹⁷⁹ TVA Market Research at 26.

¹⁸⁰ Comments, Factual Background, Section I; Comments, The Draft Environmental Assessment, Section II.B.

¹⁸¹ Comments, The Draft Environmental Assessment, Section II.C.

¹⁸² *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

¹⁸³ 40 C.F.R. § 1502.16.

¹⁸⁴ *Id.* § 1508.8(a).

¹⁸⁵ *Id.* § 1508.8(b). *Accord Dubois*, 102 F.3d at 1286.

¹⁸⁶ 40 C.F.R. § 1508.7.

A. TVA’s alternatives analysis demonstrates that there is no need for the proposed action.

TVA’s conclusion that the termination of the GPP program and adoption of the No Compensation Alternative would not affect DER adoption, but merely shift it from the GPP program to behind-the-meter installations, undermines the entire purpose and need of the draft EA. In assessing the effects of the No Replacement and No Compensation Alternatives, TVA explains that it is likely that “many of the potential [customers] who would enroll in GPP under [No Action Alternative] would install a [behind-the-meter] system if the GPP Program was not available.”¹⁸⁷ TVA does not provide a basis for this assumption, but if true, that would mean that the No Replacement and No Compensation Alternatives would merely move distributed solar away from the dual-metering system and into a behind-the-meter system. The same, or roughly the same, amount of distributed solar would be installed. The same purported cost shifts would occur.¹⁸⁸ The only difference is that without a program that compensates customers for the value of solar, middle- and low-income homeowners would have little to no opportunity to create their own behind-the-meter solar. Therefore, both the No Replacement and No Compensation Alternatives fail to satisfy the purported needs and purposes expressed in the draft EA.

B. TVA’s cumulative impacts analysis is incomplete, conclusory, and perfunctory.

TVA’s one-page, conclusory analysis of cumulative impacts is “a merely perfunctory cumulative impact analysis” that “will not pass muster under NEPA.”¹⁸⁹ Courts have warned that “general statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided.”¹⁹⁰ “An environmental assessment that omits consideration of past impacts, followed by a conclusory suggestion that past impacts did not matter, cannot be in conformance.”¹⁹¹ In the draft EA, TVA failed to adequately assess cumulative impacts because it (1) did not disclose or analyze the effects of the past actions it identified; (2) failed to identify or assess the cumulative impact resulting from the 2018 Rate Change and TVA’s new long-term service contracts; and (3) provided merely a three-sentence, general conclusory statement that the current action is not anticipated to have significant cumulative effects.

¹⁸⁷ Draft EA at 42 (Alternative B). *Accord id.* at 44 (coming to the same conclusion for Alternative C).

¹⁸⁸ *Id.* at 43, 46–47.

¹⁸⁹ *Idaho Conservation League v. Bennett*, No. CV-04-447-S-MHW, 2005 WL 1041396, at *4 (D. Idaho Apr. 29, 2005) (citing *Klamath-Siskiyou Wildlands Center v. BLM*, 387 F.3d 989, 993 (9th Cir. 2004)).

¹⁹⁰ *Blue Mountains*, 161 F.3d at 1213. *Accord Center for Biological Diversity*, 538 F.3d at 1224 (pointing to the agency’s vague and conclusory statements unaccompanied by supporting data as evidence that the agency failed to take a hard look at the environmental consequences of the action.).

¹⁹¹ *Kentucky Riverkeeper, Inc. v. Rowlette*, 714 F.3d 402, 410 (6th Cir. 2013).

First, TVA’s analysis of past programs is inadequate because it fails to assess the impacts of the actions it identified. Although TVA references other federal programs that affect the adoption of distributed renewable energy (i.e., tax credits or deductions for renewable energy initiatives, trade tariffs applied to DER components, and programs by other Federal agencies addressing DER), it fails to analyze the effects of those programs, pointing to their fate as “uncertain at this time.”¹⁹² A federal entity must do more than “just catalogue ‘relevant past projects in the area.’”¹⁹³ The public must be “told what data the conclusion was based on, or why objective data cannot be provided.”¹⁹⁴ TVA provides no justification for why it could not analyze the effects of the federal programs. This may be in part due to the fact that it is entirely possible to analyze the effects of the federal actions, and others have done so.

For example, the U.S. Energy Information Administration (EIA) extensively models the effect that federal policies may have on the energy sector. Among those studies, EIA has analyzed the effect of changes to the federal solar tax credit, federal solar tariffs, and federal policies like the Clean Power Plan.¹⁹⁵ That modeling analysis shows that the termination of federal solar tax credits and introduction of solar tariffs would lead to less utility-scale and distributed solar.¹⁹⁶ (Figures 11–12).

¹⁹² Draft EA at 51.

¹⁹³ *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 972 (9th Cir. 2006).

¹⁹⁴ *Id.*

¹⁹⁵ Att. 38, U.S. Energy Information Admin., *Tax Credits and Solar Tariffs Affect Timing of Projected Renewable Power Plan Deployment*, May 15, 2018, <https://www.eia.gov/todayinenergy/detail.php?id=36212>; Att. 39, U.S. Energy Information Administration, *Alternative Policies in Power Generation and Energy Demand Markets: Issue in Focus from the Annual Energy Outlook 2018*, at 12 (May 2018) [hereinafter “EIA 2018 Energy Outlook Cases”].

¹⁹⁶ EIA 2018 Energy Outlook Cases at 10–11.

Figure 11. Electricity Generation from Utility-Scale Solar Photovoltaic and End-Use Solar Photovoltaic 2010–2050¹⁹⁷

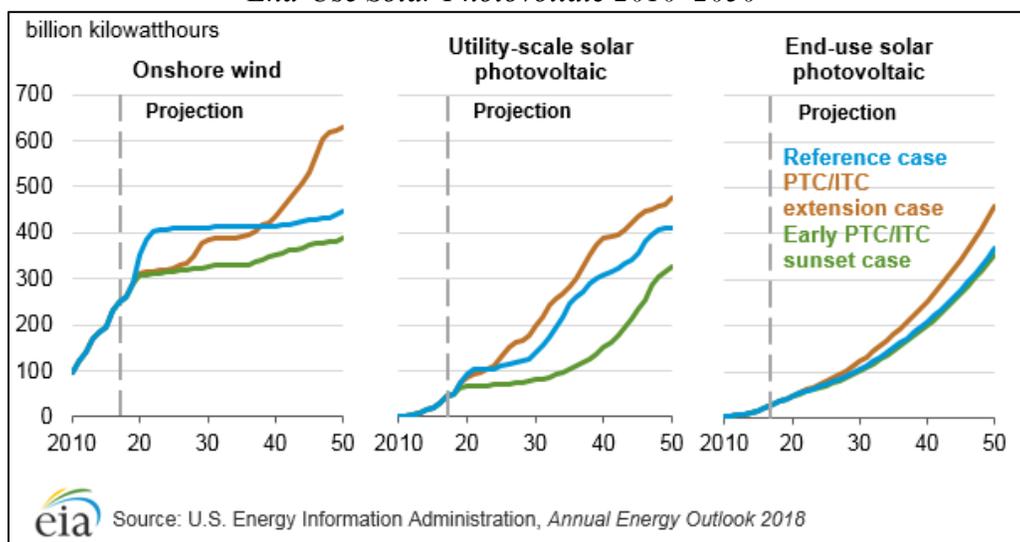
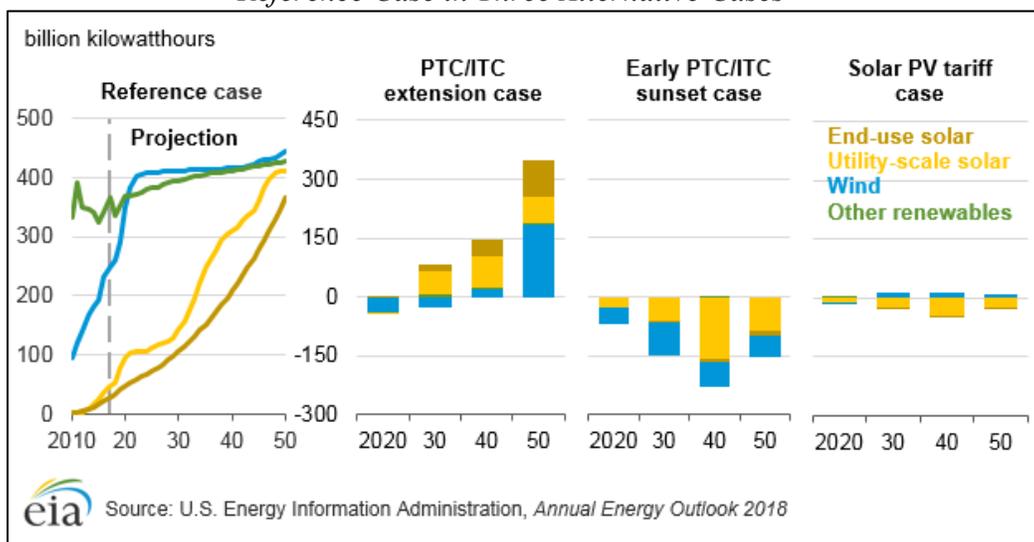


Figure 12. Renewable Electricity Generation by Energy Source, 2010–2050 and Change from Reference Case in Three Alternative Cases¹⁹⁸



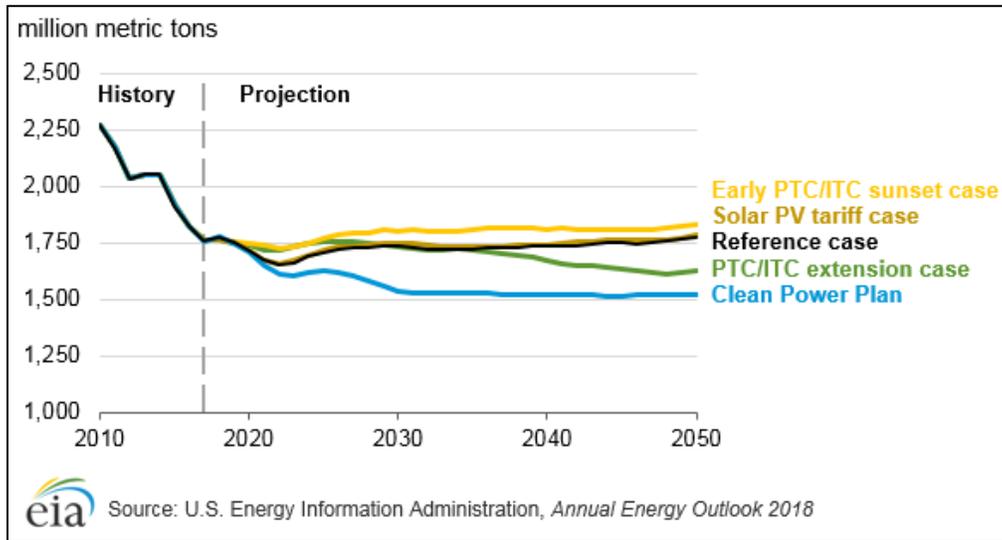
Moreover, EIA analyzed the effect of all three policies on greenhouse gas emissions showing that the resulting decrease in distributed and utility-scale solar generation would lead to more greenhouse gas emissions over time.¹⁹⁹ (Figure 13).

¹⁹⁷ *Id.* at 11.

¹⁹⁸ *Id.* at 10.

¹⁹⁹ *Id.* at 17.

Figure 13. Electricity Generation-Related Carbon Dioxide Emissions in the Electric Power Sector in Five Cases, 2010–2050²⁰⁰



Second, TVA fails to identify recent TVA-led actions that would also affect the adoption of distributed energy resources in the Valley, except for a vague reference to TVA’s economic development efforts, rate changes, and TVA energy efficiency programs.²⁰¹ The 2018 Rate Change was directed at disincentivizing DER, purportedly to prevent so-called cost shifting.²⁰² Similarly, TVA’s new service offering locks LPCs into long-term contracts with TVA that restrict the LPCs’ ability to flexibility respond to the demands of their customers.²⁰³ Together, these actions plus the No Action, No Replacement, or No Compensation Alternative would very likely to lead to significant increases in electricity consumption by TVA customers. Since this consumption would be satisfied more through TVA’s generation than through the DER that TVA hopes to discourage, significant environmental impacts are likely to occur. The cumulative impacts of the No Action, No Replacement, and No Compensation Alternatives must include analysis of the increased environmental impacts above baseline conditions because it would encourage TVA to run existing coal or gas generation at higher rates or to purchase or build additional generation instead of relying on DER.²⁰⁴ DER use can also reduce wasted energy by limiting line losses associated with the transmission of electricity.²⁰⁵

Finally, where TVA addresses the cumulative impacts of the proposed alternatives, it is in general terms that are conclusory and free of analysis. The only “assessment” of cumulative

²⁰⁰ *Id.* at 15.

²⁰¹ Draft EA at 51.

²⁰² 2018 Rate Change at i.

²⁰³ TVA Long-Term Contract; SACE Comments on Long-Term Contracts; Energy Policy Institute Article; Flessner Article.

²⁰⁴ IRP Working Group Meeting 12 at 47, 49.

²⁰⁵ DG-IV Methodology 15–16.

impacts comes in one paragraph, where TVA provides a “general” statement that there is “some potential” that the No Replacement and No Compensation Alternatives “could contribute to cumulative impacts,” but that the “minor negative and positive impacts” of No Replacement and No Compensation Alternatives are “not anticipated to result in significant cumulative environmental or socioeconomic impacts.”²⁰⁶ Generic, specious analysis of cumulative impacts does not satisfy the agency’s obligation to take a hard look.

To the extent TVA attempts to tier to its 2019 IRP’s assessment of cumulative impacts to supplement this paltry analysis, that attempt is unfounded. Tiering is only permissible for an issue that was considered in prior NEPA review.²⁰⁷ Tiering to the 2019 IRP is not permitted because the 2019 IRP assumed only that the GPP program would be terminated at the end of December 2019 and did not analyze impacts associated with the No Action or No Compensation Alternatives.²⁰⁸

Therefore, the draft EA’s paltry cumulative effects analysis does not constitute a hard look.

C. Greenhouse gas emissions and climate change are absent from the cumulative effects analysis.

TVA’s analysis of cumulative effects is devoid of any discussion about greenhouse gas emissions and climate change. A federal entity’s analysis is arbitrary and capricious when it “entirely fail[s] to consider an important aspect of the problem.”²⁰⁹ “The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.”²¹⁰ Because we are so close to the tipping point where we will no longer be able to slow or stop the effects of climate change, consideration of greenhouse gas emissions is vital.

To the extent TVA argues that it is unable to calculate those effects to a tee, it must still make a good faith effort to analyze greenhouse gas emissions effects because federal entities “may not shirk their responsibilities under NEPA by labeling any and all discussion of future

²⁰⁶ Draft EA at 52.

²⁰⁷ *Kern v. Bureau of Land Management*, 284 F.3d 1062, 1076 (9th Cir. 2002). *Accord S. Fork Band Council Of W. Shoshone Of Nevada v. U.S. Dep’t of Interior*, 588 F.3d 718, 726 (9th Cir. 2009) (“Though ‘tiering’ to a previous EIS is sometimes permissible, the previous document must actually discuss the impacts of the project at issue.”); *Friends of the River v. F.E.R.C.*, 720 F.2d 93, 109 (D.C. Cir. 1983).

²⁰⁸ See Comments, The Draft Environmental Assessment, Section I.B. (discussing the assumptions in the 2019 IRP).

²⁰⁹ *Sherwood*, 590 F. App’x at 459 (citing *Northwoods Wilderness Recovery, Inc. v. United States Dep’t of Agric. Forest Serv.*, 192 Fed. App’x. 369, 374 (6th Cir. 2006)).

²¹⁰ *Center for Biological Diversity*, 538 F.3d at 1217.

environmental effects as crystal ball inquiry.”²¹¹ Courts have made it clear that a federal entity must address an action’s potential effects on greenhouse gas emissions, particularly in a situation where it is a given that the No Action, No Replacement, or No Compensation Alternative in conjunction with related past and future programs “will affect the level of the nation’s greenhouse gas emissions and impact global warming.”²¹² Courts have found this analysis inadequate if an agency’s analysis fails to grapple with the “incremental impact that those emissions will have on climate change or the environment more generally in light of other past, present, and reasonably foreseeable actions.”²¹³ As shown in the EIA analysis laid out above, the effect of the No Compensation and No Replacement Alternatives in addition to other federal actions could be significant.²¹⁴

Because the Draft EA is devoid of any analysis of greenhouse gas emissions and climate change, TVA has failed to comply with NEPA.

V. Termination and replacement of the GPP program requires an EIS.

The termination and replacement of the GPP program is a major federal action that could have a significant effect on the human environment, and therefore requires an EIS. A “major federal action” includes actions with effects that may be major and which are potentially subject to Federal control and responsibility.²¹⁵ “Major” reinforces but does not have a meaning independent of “significantly.”²¹⁶ In particular, major federal actions tend to include the “[a]doption of programs, such as a group of concerted actions to implement a specific policy or plan,” such as the GPP program and proposed replacements.²¹⁷

To determine significance, an agency must consider both context and intensity.²¹⁸ Context means the significance of an action in the context of “society as a whole (human, national), the affected region, the affected interests, and the locality.”²¹⁹ NEPA regulations lay out factors to weigh whether an action has a significant effect on the human environment in terms of its intensity, including: (1) impacts on the human environment; (2) degree to which the proposed action affects public health or safety; (3) degree to which the effects are likely to be highly controversial; (4) degree to which the possible effects on the human environment are

²¹¹ *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1196 (D. Colo. 2014). *Accord N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011)

²¹² *Center for Biological Diversity*, 538 F.3d at 1214.

²¹³ *Center for Biological Diversity*, 538 F.3d at 1216.

²¹⁴ Comments, The Draft Environmental Assessment, Section IV.C.

²¹⁵ 40 C.F.R. § 1508.18.

²¹⁶ *Id.* § 1508.18.

²¹⁷ *Id.* § 1508.18(b)(3).

²¹⁸ *Id.* § 1508.27.

²¹⁹ *Id.* § 1508.27(a).

highly uncertain or involve unique or unknown risks; (5) whether the action taken with related actions would have cumulatively significant effects. Those factors show that the termination and replacement of the GPP program would have a significant effect on the human environment.

A. The termination and replacement of the GPP program would significantly affect the human environment as well as public health and safety.

If TVA had adequately evaluated the effects of an appropriate range of reasonable alternatives—including those proposed by the Citizen Groups—it would see that the termination and replacement of the GPP program would have a significant positive effect on the human environment and would have a significant effect on public health and safety. Under the NEPA regulations, “A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.”²²⁰

TVA’s own analysis of the Promote DER strategy supports that conclusion. TVA concluded that the Promote DER strategy would lead to total reduction of emissions of sulfur dioxide (SO₂) from 2019–2038 on average by 169,130 tons, nitrogen oxides (NO_x) by 158,531 tons, and mercury by 3,710 tons.²²¹ The Promote DER strategy would reduce CO₂ emissions from 2019–2038 on average by 766 tons.²²² The Promote DER strategy would reduce TVA’s annual water use from just under 32,000 billion gallons to approximately 29,000 billion gallons.²²³ Those air pollutants—sulfur dioxide,²²⁴ nitrogen oxides,²²⁵ and mercury²²⁶—cause significant adverse health effects and environmental damage locally and regionally. Moreover, “[t]he harms associated with climate change are serious and well recognized,”²²⁷ and elevated levels of CO₂ endanger public health and welfare.²²⁸ Tennessee is already experiencing disproportionate damage from climate-related events.²²⁹ (Figure 14). In the Tennessee Valley,

²²⁰ *Id.* § 1508.27(b).

²²¹ 2019 IRP EIS at 5-22.

²²² *Id.* at 5-27.

²²³ *Id.* at 5-34.

²²⁴ *See, e.g.*, Att. 40, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,551 (June 22, 2010).

²²⁵ *See, e.g.*, Att. 41, National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436, 16, 439-16,449 (March 27, 2008).

²²⁶ *See, e.g.*, Att. 42, Mercury and Air Toxics Standards, 77 Fed. Reg. 9,304 (Feb. 16, 2012).

²²⁷ *Massachusetts v. U.S. Envtl. Prot. Agency*, 549 U.S. 497, 521 (2007).

²²⁸ Att. 43, U.S. Envtl. Prot. Agency, Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,516 (Dec. 15, 2009).

²²⁹ Att. 44, NOAA Nat’l Ctrs. Envtl. Info. (NCEI), U.S. Billion-Dollar Weather and Climate Disasters (2018), <https://www.ncdc.noaa.gov/billions/mapping>. [hereinafter “NOAA Disaster Mapping”]. *See also* Att. 45, NOAA NCEI, *Billion-Dollar Weather and Climate Disasters: Table of Events: Tennessee* (2018), <https://www.ncdc.noaa.gov/billions/events/TN/1980-2018>; Att. 46, Adam Terando et al., *Chapter 19: Southeast*, 744–45, in *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (Reidmiller, D.R. et al. eds. 2018), <https://nca2018.globalchange.gov> [hereinafter “NCA, Southeast Chapter”].

TVA is already feeling the repercussions of climate change on the operation of its electric system.

By encouraging DER, Citizen Groups' proposed alternatives would reduce coal and gas generation and therefore decrease greenhouse gas emissions. To comply with NEPA, TVA should use the social cost of carbon to monetize the environmental effects of CO₂ emissions.²³⁰ The disclosure of environmental effects is a "key requirement of NEPA."²³¹ As a result, NEPA requires "a reasonably thorough discussion of the significant aspects of the probable environmental consequences," to "foster both informed decisionmaking and informed public participation."²³² However, the draft EA fails to discuss the "significance"²³³ of the draft EA's indirect and cumulative effects on climate change.²³⁴ TVA should use the social cost of carbon to disclose and analyze the actual incremental effects of the CO₂ emissions resulting from the No Action, No Replacement, and No Compensation Alternatives as well as the net metering and Promote DER alternatives proposed by Citizen Groups.

²³⁰ Interagency Working Group on the Social Cost of Carbon, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis (2010), <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>.

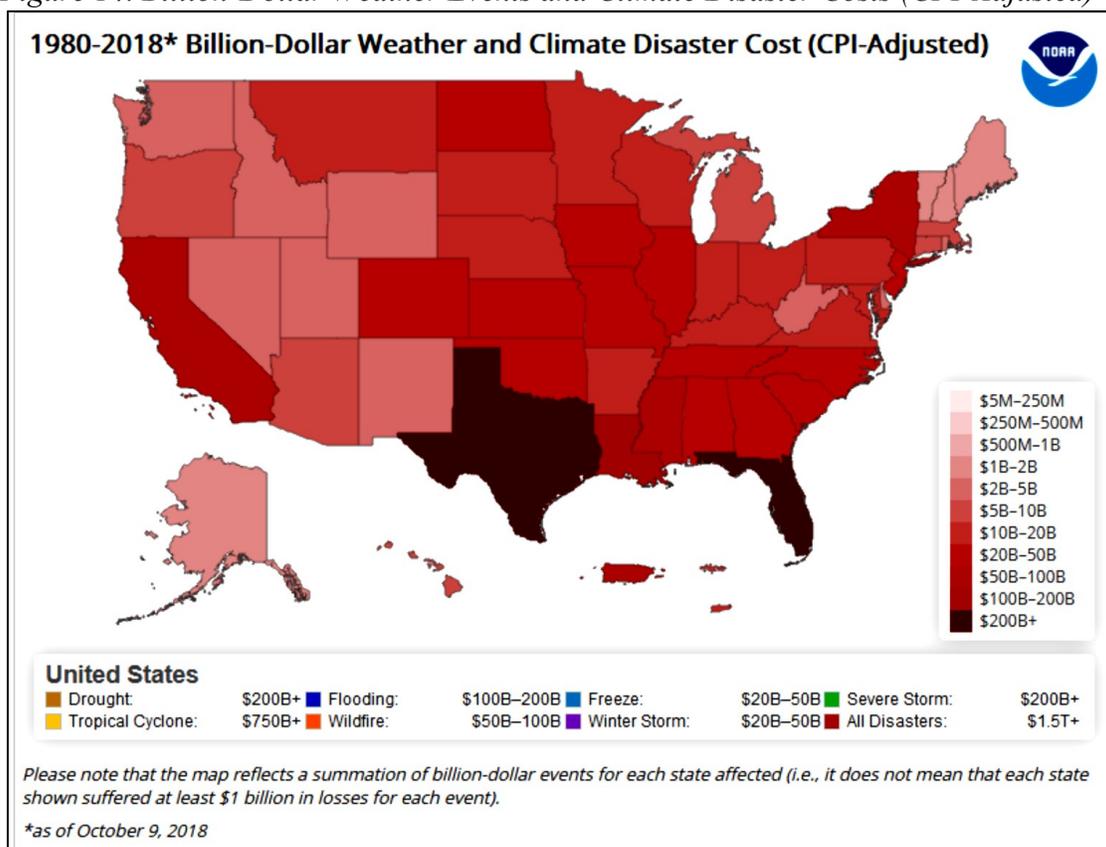
²³¹ *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 96 (1983).

²³² *Ctr. for Biological Diversity*, 538 F.3d at 1217.

²³³ 40 C.F.R. § 1502.16(b); *Sierra Club v. Fed. Energy Regulatory Comm'n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017).

²³⁴ *High Country*, 52 F. Supp. 3d at 1190 ("Beyond quantifying the amount of emissions relative to state and national emissions and giving general discussion to the impacts of global climate change, [the agencies] did not discuss the impacts caused by these emissions."); *Mont. Env'tl. Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1096–99 (D. Mont. 2017) (disagreeing that the agency "reasonably considered the impact of greenhouse gas emissions by quantifying the emissions which would be released if the [coal] mine expansion is approved, and comparing that amount to the net emissions of the United States").

Figure 14. Billion-Dollar Weather Events and Climate Disaster Costs (CPI-Adjusted)²³⁵



The retail net metering alternative proposed by the Citizen Groups would likely have similarly beneficial effects on the environment and climate change because it would similarly encourage development of distributed solar. Therefore, the cumulative impacts—including climate impacts—of the alternatives proposed by Citizen Groups would have a significant effect on the human environment and would have a significant effect on public health and safety and thus demonstrate that the termination and replacement of the GPP program would have a significant effect on the human environment.

B. The termination and replacement of the GPP program would have significant cumulative impacts.

If TVA had appropriately evaluated the potential cumulative effects of the termination and replacement of the GPP, it would have shown significant effects. Because TVA failed to adequately analyze the potential cumulative effects of the termination and replacement of the GPP program, it is impossible for TVA to know whether a change in greenhouse gas emissions would “be a significant step toward averting the ‘tipping point’ and irreversible adverse climate

²³⁵ NOAA Disaster Mapping.

change.”²³⁶ Without that analysis, TVA cannot justify its decision to prepare an EA rather than an EIS. Moreover, as Citizen Groups outlined above, the cumulative effects of an appropriate range of reasonable alternatives would have significant cumulative effects.²³⁷ Therefore, this action would have significant cumulative effects and should be analyzed in an EIS.

C. The potential effects of an appropriate range of reasonable alternative are highly controversial.

The potential effects of the termination and replacement of the GPP program are highly controversial. Controversial is a substantial dispute about the size, nature, or effect of the major Federal action rather than the existence of opposition to a use.²³⁸

As Citizen Groups outlined above, the potential cumulative effects, particularly climate effects, of TVA’s action would have significant environmental effects.²³⁹ TVA essentially concludes otherwise because it fails to even include a discussion of those effects. Because Citizen Groups present a substantial dispute about the size and effect of the analyzed alternatives and those alternatives TVA failed to consider, this action is controversial and should be analyzed in an EIS.

As discussed above, there is also a substantial dispute about the nature of TVA’s proposal to adopt the No Compensation Alternative.²⁴⁰ Citizen Groups have presented significant evidence that contradicts TVA’s conclusion that (1) customers are not interested in the GPP program or other programs that would compensate them for their export of solar to the grid, (2) that cost-shifting is occurring, and (3) that distributed solar would prevent TVA from investing in utility-scale solar.²⁴¹ Citizen Groups’ analysis suggests that the true purpose of TVA’s proposal to adopt the No Compensation Alternative is to continue to undermine DER in the Valley.²⁴² As Citizen Groups describe, over the past several years, TVA has significantly undervalued distributed solar and has taken several steps to reduce customer interest in investing in it. Accordingly, a substantial dispute exists regarding the nature of TVA’s action. An EIS is necessary.

²³⁶ *Center for Biological Diversity*, 538 F.3d at 1221.

²³⁷ Comments, The Draft Environmental Assessment, Section IV.B.

²³⁸ *Blue Mountains*, 161 F.3d at 1212.

²³⁹ Comments, The Draft Environmental Assessment, Section IV.B.

²⁴⁰ Comments, Factual Background, Sections I–II.

²⁴¹ *Id.*

²⁴² *Id.*

D. Terminating the GPP program has uncertain, or unique or unknown risks.

TVA is attempting to predict customer behavior in a way that it acknowledged it is unable to do accurately. TVA's proposal to terminate and replace the GPP program has uncertain or unknown risks, as TVA itself has acknowledged. TVA has had a GPP-like program in place for twelve years. Even with the GPP program in place, customers have installed behind-the-meter solar. If TVA were to remove the GPP program and replace it with the No Compensation Alternative, it is unknown how customers will react, either increasing installation of behind-the-meter solar or stopping DER implementation in its tracks. Because of the uncertain and unknown risks associated with TVA's action, TVA must complete an EIS.

E. TVA's proposal to terminate and replace the GPP program with its preferred alternative is inconsistent with the TVA Act.

TVA's originating statute, the Tennessee Valley Authority Act of 1933 and as subsequently amended (the TVA Act), sets the parameters delineating exactly what activities TVA is authorized to undertake and how it is to perform them. Section 10 of the TVA Act requires TVA, in its sale of electricity, to "give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members."²⁴³ The language of § 10 directs TVA's power sales to focus on "farms and small villages," and on "agricultural and domestic use, or for small or local industries."²⁴⁴ Indeed, § 10 authorized TVA to "make studies, experiments, and determinations to promote the wider and better use of electric power" among these small and residential customer classes, and to work with States, cities, and cooperatives, and other entities to do so.²⁴⁵ These same customer classes—and the local power companies who serve them—can benefit from DER by reducing bills and deferring the need for investment in the distribution system. DER can also enhance reliability and resilience for these customers. Yet contrary to its obligations under § 10, the No Replacement and No Compensation Alternatives would make it harder and less economical for these same LPCs and customers to invest in DER. Therefore, the alternatives considered in the draft EA are inconsistent with the TVA Act.

²⁴³ 16 U.S.C. § 831i.

²⁴⁴ *Id.* § 831i.

²⁴⁵ *Id.* § 831i.

CONCLUSION

For all these reasons, TVA's draft EA is inadequate, fails to constitute a hard look, contains arbitrary and capricious reasoning, and is woefully inadequate to analyze the significant effects that could result from an adequate range of reasonable alternatives. To remedy these flaws, TVA must withdraw the draft EA and issue an EIS that considers reasonable alternatives that would compensate customers for the value their exports of solar generation provide to the grid and the Valley.

**LIST OF ATTACHMENTS FOR
COMMENTS ON DRAFT EA TO TERMINATE THE GPP PROGRAM**

- Att. 1**, TVA, Form 10-K (2018), <http://www.snl.com/Cache/c395786289.html>.
- Att. 2**, TVA, 2018 Wholesale Rate Change, Draft Environmental Assessment (March 2018).
- Att. 2b**, TVA, 2018 Wholesale Rate Change, Final Environmental Assessment (May 2018).
- Att. 3**, TVA, 2019 Integrated Resource Plan: Volume I—Final Resource Plan (2019).
- Att. 4**, TVA, 2019 Integrated Resource Plan: Volume II—Final Environmental Impact Statement (2019).
- Att. 5**, NES Contract No. 19-72-316.
- Att. 6**, Letter from Stephen A. Smith, SACE, to Members of the KUB Board of Directors, Oct. 17, 2019, <https://cleanenergy.org/blog/tva-contract-drawbacks-outweigh-benefits-for-kub>.
- Att. 7**, Daniel Tait & Joe Smyth, *TVA Attempts to Chain Local Power Companies to Longer Contracts in Effort to Prevent Defection Risk*, Energy & Policy Institute, Sept. 22, 2019, <https://www.energyandpolicy.org/tva-local-power-companies-defection>.
- Att. 8**, Dave Flessner, *TVA Offers Rebates to Local Power Companies that Sign Long-Term Contracts with TVA*, Chattanooga Times Free Press, Aug. 22, 2019, <https://www.timesfreepress.com/news/breakingnews/story/2019/aug/22/tva-cut-wholesale-rates-local-power-companies-sign-20-year-contracts/501821>.
- Att. 9**, Southern Environmental Law Center, *Green Power Provider Participants by TVA Distributors, 2010–2018* (2019).
- Att. 10**, TVA FOIA Response (2018).
- Att. 11**, TVA, *Distributed Generation-Integrated Value (DG-IV): A Methodology to Value DG on the Grid* (Oct. 2015).
- Att. 12**, Virginia Lacy et al., *TVA Value of Solar Reviewer Comments* (2015).
- Att. 13**, Maine Public Utilities Comm’n, *Maine Distributed Solar Valuation Study* (Apr. 14, 2015).
- Att. 14**, Letter from Christopher W. Hansen, TVA, to DPP Participant, Dec. 28, 2017.

- Att. 15**, Letter from Christopher W. Hansen, TVA, to DPP Participant, Oct. 31, 2019.
- Att. 16**, Comments from Zachary M. Fabish, Sierra Club, & Amanda Garcia, SELC, to Matthew Higdon, TVA, Apr. 9, 2018.
- Att. 17**, Comments from Christina I. Reichert et al., SELC et al., to Ashley Pilakowski, TVA, Apr. 7, 2019.
- Att. 18**, TVA, Minutes of Meeting of the Board of Directors, Feb. 14, 2019.
- Att. 19**, TVA, Board Meeting, presented Feb. 14, 2019.
- Att. 20**, *Green Power Providers*, TVA, <https://www.tva.gov/Energy/Valley-Renewable-Energy/Green-Power-Providers> (last visited Nov. 5, 2019).
- Att. 21**, TVA, *The Green Power Providers Lifecycle*.
- Att. 22**, Kelsey Misbrener, *Poll Finds 81% of Tennessee Voters Want More Solar in the State*, Solar Power World, Dec. 6, 2017, <https://www.solarpowerworldonline.com/2017/12/tennessee-voters-support-solar>.
- Att. 23**, Joseph Zeballos-Roig & Angela Wang, *Americans Really Want the US to Adopt Renewable Energy Like Wind and Solar, While Rejecting Fossil Fuels Like Coal*, Business Insider, Oct. 1, 2019, <https://www.businessinsider.com/americans-really-want-the-us-adopt-renewable-energy-sources-2019-10>.
- Att. 24**, Solar Energy Industries Ass'n, *Solar Power: Becoming America's Energy* (2018), <https://www.seia.org/sites/default/files/2018-09/SEIA-GSG-Solar-Messaging-Survey-2018.pdf>.
- Att. 25**, Lazard, *Growing Percentage of U.S. Voters Favor Increased Commitment to Alternative Energy* (2016), <https://www.lazard.com/media/2489/2016-alternative-energy-poll-release.pdf>.
- Att. 26**, Hart Research Associates, *Public Opinion on US Energy and Environmental Policy*, Center for American Progress (2014), https://cdn.americanprogress.org/wp-content/uploads/2015/01/Public-Opinion-on-US-Energy-and-Environmental-Policy_slides.pdf.
- Att. 27**, Zac Auter, *In U.S., 73% Now Prioritize Alternative Energy over Oil, Gas*, Gallup, Mar. 24, 2016, https://news.gallup.com/poll/190268/prioritize-alternative-energy-oil-gas.aspx?g_source=CATEGORY_ENVIRONMENT_AND_ENERGY&g_medium=topic&g_campaign=tiles.

Att. 28, Complaint, Center for Biological Diversity v. Tenn. Valley Auth., No. 3:18-CV-1446-LCB (N.D. Al. Sept. 6, 2018).

Att. 29, Memorandum Opinion and Order, Center for Biological Diversity v. Tenn. Valley Auth., No. 3:18-CV-1446-LCB (N.D. Al. Aug. 26, 2019).

Att. 30, Gideon Weissman & Bret Fanshaw, *Shining Rewards: The Value of Rooftop Solar Power for Consumers and Society*, Frontier Group and Environment America Research and Policy Center, (Oct. 2016),

<https://frontiergroup.org/sites/default/files/reports/Frontier%20Group%20-%20Shining%20Rewards%202016.pdf>.

Att. 31, Mark Muro & Devashree Saha, *Rooftop Solar: Net Metering is a Net Benefit*, Brookings Institute (May 23, 2016) <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit>.

Att. 32, TVA, 2019 IRP Working Group Meeting 12: March 27–28, 2019 (2019).

Att. 33, National Association of Regulatory Utility Commissioners, *The Value of Resilience for Distributed Energy Resources: An Overview of Current Analytical Practices* (Apr. 2019), <https://pubs.naruc.org/pub/531AD059-9CC0-BAF6-127B-99BCB5F02198>.

Att. 34, Shalina Chatlani, *TVA Facebook Contract Shows Solar Growth, But Environmentalists Say There's a Catch*, NPR, Nov. 12, 2018, <https://www.nashvillepublicradio.org/post/tva-facebook-contract-shows-solar-growth-environmentalists-say-theres-catch#stream/0>.

Att. 35, Jim Gaines, *TVA Announces Solar Farms to Serve Google Data Centers*, KnoxNews, Jan. 16, 2019, <https://www.knoxnews.com/story/money/business/2019/01/16/tva-solar-farms-google-data-centers/2595383002>.

Att. 36, *Net Metering Map*, N.C. Clean Energy Technology Center DSIRE (Oct. 2019), http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2019/10/DSIRE_Net_Metering_Oct2019.pdf.

Att. 37, Tenn. Valley Auth., Notice of Determinations on the PURPA Standards Set Forth in the Energy Policy Act of 2005, 72 Fed. Reg. 44,910 (Aug. 9, 2007).

Att. 38, U.S. Energy Information Admin., *Tax Credits and Solar Tariffs Affect Timing of Projected Renewable Power Plan Deployment*, May 15, 2018, <https://www.eia.gov/todayinenergy/detail.php?id=36212>.

Att. 39, U.S. Energy Information Administration, *Alternative Policies in Power Generation and Energy Demand Markets: Issue in Focus from the Annual Energy Outlook 2018* (May 2018).

Att. 40, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,551 (June 22, 2010).

Att. 41, National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436 (Mar. 27, 2008).

Att. 42, Mercury and Air Toxics Standards, 77 Fed. Reg. 9,304 (Feb. 16, 2012).

Att. 43, U.S. Env'tl. Prot. Agency, Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

Att. 44, NOAA Nat'l Ctrs. Env'tl. Info. (NCEI), U.S. Billion-Dollar Weather and Climate Disasters (2018), <https://www.ncdc.noaa.gov/billions/mapping>.

Att. 45, NOAA NCEI, *Billion-Dollar Weather and Climate Disasters: Table of Events: Tennessee* (2018), <https://www.ncdc.noaa.gov/billions/events/TN/1980-2018>.

Att. 46, Adam Terando et al., *Chapter 19: Southeast in Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (Reidmiller, D.R. et al. eds. 2018), <https://nca2018.globalchange.gov>.

**LIST OF ATTACHMENTS FOR
COMMENTS ON 2019 INTEGRATED RESOURCE PLAN**

- Att. 1**, SELC Comments on Scoping for 2019 IRP.
- Att. 2**, TVA, *2018 Wholesale Rate Change, Draft Environmental Assessment* (March 2018).
- Att. 3**, Letter from Amanda Garcia, SELC, to Gary Brinkworth, TVA, Apr. 3, 2015.
- Att. 4**, North American Electric Reliability Corporation, *2018 Long-Term Reliability Assessment* (2018).
- Att. 5**, SERC Reliability Corporation, *2018 Annual Assessment Reliability Review Subcommittee* (2018).
- Att. 6**, *SERC 2018 Probabilistic Assessment*, GE Energy Consulting, SERC (2018).
- Att. 7**, James F. Wilson, *Comments on: The Economic Ramifications of Resource Adequacy Whitepaper*, Wilson Energy Economics (2013).
- Att. 8**, James Wilson, *Review and Evaluation of Resource Adequacy and Solar Capacity Value Issues with regard to the Duke Energy Carolinas and Duke Energy Progress 2018 Integrated Resource Plans and Avoided Cost Filings*, N.C. Utilities Comm'n (Docket E-100, Sub 157 2019).
- Att. 9**, Eric Gimon et al., *The Coal Cost Crossover: Economic Viability of Existing Coal Compared to New Local Wind and Solar Resources* (2019).
- Att. 10**, National Research Council, *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*, National Academies Press (2010).
- Att. 11**, Eric Wilson, et al., *Energy Efficiency Potential in the US Single-Family Housing Stock*, National Renewable Energy Laboratory (2017).
- Att. 12**, *State Level Electric Energy Efficiency Potential Estimates*, Electric Power Research Institute (2017).
- Att. 13**, *Industrial Energy Efficiency Potential Analysis*, U.S. Dep't of Energy (2016).
- Att. 14**, Georgia Power Company, 2019 Integrated Resource Plan. Georgia Public Service Commission Docket 42310 (2019).
- Att. 15**, *Lazard's Levelized Cost of Energy Analysis – Version 12.0*, Lazard (2018).

Att. 16, Solar Crowdsourc, *Solarize Atlanta*,
<https://www.solarcrowdsource.com/campaign/atlanta-ga> (Apr. 5, 2019).

Att. 17, *Cost of Solar Panels in GA*, Energy Sage,
<https://www.energysage.com/solarpanels/solar-panel-cost/ga> (Apr. 6, 2019).

Att. 18, Dave Flessner, *BlueCross BlueShield to Install 10,000 Solar Panels to Power Chattanooga Headquarters*, Times Free Press, Mar. 27, 2019,
<https://www.timesfreepress.com/news/business/aroundregion/story/2019/mar/27/bluecross-solarpanels/491482>.

Att. 19, U.S. Dep’t of Energy, *Final Report on Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies 35* (Nov. 2016).

Att. 20, Brendon Baatz, ACEEE, *Everyone Benefits: Practices and Recommendations for Utility System Benefits for Energy Efficiency* (2015).

Att.21, *Final 2015 TVA Integrated Resource Plan*, TVA (2015).

Att. 22, SELC, *Comments on Draft 2015 IRP* (Apr. 27, 2015).

Att. 23, *Duke Energy Carolinas Integrated Resource Plan* (2018).

Att. 24, *Major Residential Equipment and Commercial Heating, Cooling, & Water Heating Equipment, Appendix A—Technology Forecast Updates—Residential and Commercial Building Technologies—Reference Case*, Navigant Consulting (2018)

Att. 25, *Lighting and Commercial Ventilation and Refrigeration Equipment, Appendix C—Technology Forecast Updates—Residential and Commercial Building Technologies—Reference Case*, Navigant Consulting (2018).

Att. 26, Testimony of Mr. Andrew deLaski, Appliance Standards Awareness Project, before the U.S. House Committee on Energy and Commerce, Energy Subcommittee, *Wasted Energy: DOE’s Inaction on Efficiency Standards and Its Impact on Consumers and the Climate* (Mar. 7, 2019).

Att. 27, *US Light Bulb Standards Save Billions for Consumers But Manufacturers Seek a Rollback*, ASAP/ACEEE Issue Brief (2018).

Att. 28, *Appendices: US Light Bulb Standards Save Billions for Consumers But Manufacturers Seek a Rollback*, ASAP/ACEEE Issue Brief (2018).

- Att. 29**, R. Athalye, et al., *Impacts of Model Building Codes*, Pacific Northwest National Laboratory (2016).
- Att. 30**, R. Bartlett, et al., *Georgia Residential Energy Code Field Study: Baseline Report*, Pacific Northwest National Laboratory (2017).
- Att. 31**, R. Bartlett, et al., *Alabama Residential Energy Code Field Study: Baseline Report*, Pacific Northwest National Laboratory (2017).
- Att. 32**, R. Bartlett, et al., *North Carolina Residential Energy Code Field Study: Baseline Report*, Pacific Northwest National Laboratory (2017).
- Att. 33**, R. Barlett, et al., *Kentucky Residential Energy Code Field Study: Baseline Report*, Pacific Northwest National Laboratory (2017).
- Att. 34**, *A National Assessment of Demand Response Potential*, Federal Energy Regulatory Commission (2009).
- Att. 35**, *Tennessee Valley Authority Potential Study*, Global Energy Partners (2011).
- Att. 36**, Ahmad Faruqui, et al., *Time-Varying and Dynamic Rate Design*, Regulatory Assistance Project (2012).
- Att. 37**, TVA, *2019 IRP Working Group Meeting 11: February 28–March 1, 2019* (2019).
- Att. 38**, Duke Energy Florida, LLC's Petition for Limited Proceeding to Approve Second Solar Base Rate Adjustment; Docket No. 20190072-EI (Fl. Pub. Utilities Comm'n Mar. 25, 2019).
- Att. 39**, TVA, *Request for Proposals for Renewable Energy Resources* (“2019 Renewable RFP”) (Apr. 1, 2019).
- Att. 40**, Betsy Lillian, *TVA Seeks 200 MW of Renewable Energy*, Solar Industry Magazine, Apr. 2, 2019, <https://solarindustrymag.com/tva-seeks-200-mw-of-renewable-energy>.
- Att. 41**, TVA, *2019 IRP Working Group Meeting 12: March 27–28, 2019* (2019).
- Att. 42**, Lazard, *Lazard’s Levelized Cost of Storage Analysis—Version 4.0* (Nov. 2018).
- Att. 43**, Wood Mackenzie, *U.S. Energy Storage Monitor: 2018 Year in Review and Q1 2019 Executive Summary* (2019).

Att. 44, Verinika Henze, *Battery Power's Latest Plunge in Costs Threatens Coal, Gas*, BloombergNEF, Mar. 26, 2019, <https://about.bnef.com/blog/battery-powers-latest-plungecoststhreatens-coal-gas>.

Att. 45, *The Environmental Review of Solar Farms in the Southeast U.S.: Maximizing Benefits & Minimizing Impacts to Drive Smart, Sustainable Development of Solar Power*, SELC Solar Initiative Policy Brief (2017).

Att. 46, Frank Jossi, *Energy and Food Together: Under Solar Panels, Crops Thrive*, PRI, June 8, 2018, <https://www.pri.org/stories/2018-06-08/energy-and-food-together-under-solar-panelscrops-thrive>.

Att. 47, U.S. Env'tl. Prot. Agency, *RE-Powering America's Land: Potential Advantages of Reusing Potentially Contaminated Land for Renewable Energy* (2012) https://www.epa.gov/sites/production/files/201504/documents/contaminated_land_resuse_factsheet.pdf.

Att. 48, *Music City Solar Goes Live at Historic Plug-In Ceremony*, NES Power News, <https://nespowernews.com/2018/08/01/music-city-solar-goes-live-at-historic-plug-in-ceremony>.

Att. 49, *Draft Results* (2019).

Att. 50, *Updated Draft Results* (2019).

Att. 51, Adam Terando et al., *Chapter 19: Southeast in Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (Reidmiller, D.R. et al. eds. 2018).

Att. 52, *Interagency Working Group on the Social Cost of Carbon, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis* (2010).

Att. 53, Memorandum from Michael Boots, CEQ, *Effective Use of Programmatic NEPA Reviews* (Dec. 18, 2014).