



December 20, 2021

Department of Public Service  
112 State Street  
Montpelier, VT 05620-2601

*Via email:* PSD.ComprehensiveEnergyPlan@vermont.gov

**re: Draft 2022 Comprehensive Energy Plan**

Dear Commissioner Tierney:

Conservation Law Foundation (“CLF”) is grateful for the opportunity to provide public comments on the draft 2022 Comprehensive Energy Plan (“Draft CEP”). As described below, the transportation section can be strengthened by committing to concrete steps to reduce vehicle miles of travel, and by describing the limitations and costs associated with alternative transportation fuels. The thermal section can be improved by accurately reflecting thermal greenhouse gas emissions, striving for 100% carbon-free thermal energy, committing to concrete steps to achieve weatherization at scale, unequivocally proposing a 200-amp service requirement for new residential construction, and by measuring thermal costs with the social cost of carbon defined in the Draft CEP. Finally, the electricity section should be edited to accurately reflect Vermont’s electricity emissions, to commit to concrete steps to fully decarbonize the electricity sector and bring additional carbon-free energy online, and by recommending against a portfolio standard that would discourage new wind and solar electricity generation by allowing utilities to retire nuclear energy attributes to satisfy portfolio requirements.

## TRANSPORTATION

The Draft CEP sets goals of having 10% of energy needs for transportation come from renewable sources by 2025, and 45% by 2040; and to reduce total transportation greenhouse gas emissions by 26% below 2005 levels by 2025, 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050.<sup>1</sup> The Draft CEP proposes meeting these targets through a combination of electrification of the transportation sector and transportation demand management, which offers broad benefits across Vermont’s energy policy goals while also supporting equity and affordability.<sup>2</sup> The transportation section can be strengthened in the following ways.

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<sup>1</sup> Draft CEP at 5-6.

<sup>2</sup> *Id.* at 5-7.

### ***The CEP Should Commit to Concrete Steps to Reduce Vehicle Miles of Travel***

We strongly support the Draft CEP’s proposed action items related to electrification of the transportation sector, which closely align with the State’s Climate Action Plan, including adoption of the California Clean Cars II Regulations,<sup>3</sup> as well as continued – and significantly increased – support for electric vehicle purchases and charging infrastructure. We also urge the Department of Public Service to recommend adoption of the California Advanced Clean Truck Rules, as included in the Climate Action Plan.<sup>4</sup> However, Vermont cannot rely solely on electrification to meet the requirements of the Global Warming Solutions Act and realize the co-benefits of cleaner air, enhanced resilience, a healthier population, greater affordability and more vibrant communities. We must also recommit to prioritizing strategies that will reduce reliance on single occupancy vehicles.

As recognized in the Draft CEP, the State failed to hit the targets for transportation demand management strategies as established in the 2016 CEP, which included the number of park and ride spaces available, public transit ridership, and passenger and freight rail usage.<sup>5</sup> As a related matter, Vermont’s per capita vehicle miles of travel (“VMT”) remains above the national average.

The Draft CEP acknowledges the importance of reducing VMT through Transportation Demand Management (“TDM”) and other strategies, but does not identify any actionable steps for the State to take beyond further study of the benefits. While CLF appreciates the value of quantifying the costs and benefits of TDM,<sup>6</sup> the State should continue to push forward with no-regrets strategies in the meantime, including but not limited to improving the infrastructure and safety measures that foster walking and biking, both by enhancing the Complete Streets program and by continued funding of these measures through various existing grant programs; promoting compact development in our existing downtowns and village centers, especially those already served by water and wastewater infrastructure; and improving our transit infrastructure, trip planning tools, and transit service to make it a more appealing alternative to driving alone.

### ***The CEP Should Describe the Limitations and Costs of Transportation Biofuels***

The Draft CEP supports expanded use of biodiesel for Vermont’s medium- and heavy-duty transportation subsector.<sup>7</sup> However, the combustion of biodiesel alone produces significant

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<sup>3</sup> *Id.* at ES-12 and 5-19.

<sup>4</sup> Initial Vermont Climate Action Plan, December 2021, p. 83.

<sup>5</sup> Draft CEP at 5-46.

<sup>6</sup> *Id.* at 5-46.

<sup>7</sup> *Id.* at 5-30 through 5-31.

greenhouse gas emissions<sup>8</sup> and the Draft CEP acknowledges that biodiesel will be blended into conventional fossil diesel.<sup>9</sup> As such, biodiesel will itself produce greenhouse gas emissions when combusted and will enable the prolonged use of fossil diesel, which produces substantial greenhouse gas emissions as well as air pollutants deleterious to human health. Thus, even if biodiesel offers some short-term gains in terms of emissions savings, it must not be considered a long-term solution. Relatedly, the Draft CEP endorses blending ethanol into gasoline and establishing new transportation infrastructure to create “renewable” natural gas transportation options in Vermont.<sup>10</sup> Like biodiesel, these other fuels generate greenhouse gas emissions when combusted and would merely replace one polluting energy source with another.<sup>11</sup> The Draft CEP should be revised to acknowledge the climate consequences and social cost of carbon arising from a policy that calls for the combustion of biofuels and the prolonged use of fossil fuels.

The Draft CEP should also be revised to prioritize the development and deployment of electric medium- and heavy-duty transportation technologies. Electric offerings today are already capable of supporting most applications, and technological progress continues to swiftly address the most demanding use cases. These technologies are affordable and increasingly so, particularly when considered from a total costs of ownership perspective. Electrification also eliminates tailpipe emissions, mitigating air pollution harms attributable to medium- and heavy-duty trucks that is often found in communities that live near heavily trafficked areas. The State should avoid investing in biofuels (particularly as it entails fossil fuel infrastructure outgrowth) where electric alternatives are feasible or will be in the short term.

## THERMAL

The Draft CEP sets the goal of having thermal energy be 30% renewable by 2025, 45% renewable by 2032, and 70% renewable by 2042.<sup>12</sup> The underlying interest of decarbonizing Vermont’s thermal sector is commendable. However, the Draft CEP should be strengthened by making the following revisions.

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<sup>8</sup> John M. DeCicco, *et al*, *Carbon Balance Effects of U.S. Biofuel Production and Use*, CLIMATE CHANGE (2016).

<sup>9</sup> Draft CEP at 5-30 through 5-31.

<sup>10</sup> *Id.* at 5-31 through 5-34.

<sup>11</sup> See DeCicco, *supra* note 8; see also Emily Grubert, *et al*, *At Scale, Renewable Natural Gas Systems Could Be Climate Intensive: The Influence of Methane Feedstock and Leakage Rates*, ENVIRO. RESEARCH LETTERS at 1 (2020).

<sup>12</sup> Draft CEP at ES-15.

### *The CEP Should Accurately Reflect Thermal Emissions and Pollution*

The CEP should be revised to accurately reflect thermal greenhouse gas emissions and air pollution from all energy sources it recommends, and should then base Vermont’s energy strategies upon those accurate numbers. The Draft CEP inaccurately indicates that all energy sources defined by the State as “renewable” are clean<sup>13</sup> and builds pathways upon that assumption.<sup>14</sup> However, many energy sources defined by the State as “renewable” in fact cause significant greenhouse gas emissions and toxic air pollution that the Draft CEP fails to address. For example, the Draft CEP states that thermal emissions account for approximately 34% of the State’s overall greenhouse gas emissions<sup>15</sup> but omits from that figure the emissions caused by certain fuels that the Draft CEP inaccurately treats as zero-emissions. Approximately 25% of the energy used in Vermont to heat buildings and provide process heat comes from the combustion of biomass and other renewable fuels.<sup>16</sup> When combusted, biomass causes meaningful greenhouse gas emissions<sup>17</sup> and toxic air pollution that is detrimental to human health.<sup>18</sup> The Draft CEP improperly omits those critical details when planning Vermont’s energy future. In addition, the Draft CEP refers to biodiesel, syngas, and renewable natural gas as “low- or no-carbon fuels” when those fuels actually produce meaningful greenhouse gases and toxins.<sup>19</sup> The

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<sup>13</sup> *Id.* at ES-15 & 6-30.

<sup>14</sup> *Id.* at 6-38 through 6-53.

<sup>15</sup> *Id.* at ES-15 & 6-1.

<sup>16</sup> *Id.* at 6-2 & ES-15.

<sup>17</sup> See Peter Raven, *et al*, *Letter Regarding Use of Forests for Bioenergy* (Feb. 11, 2021); Thomas Buchholz, *et al.*, *Greenhouse Gas Emissions of Local Wood Pellet Heat from Northeastern US Forests* at i, 11, 15-16 (2017); John D. Serman, *et al*, *Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy*, ENVIRON. RES. LETT. at 6 (2018); Mary S. Booth, *Trees, Trash, and Toxics: How Biomass Energy Has Become the New Coal*, PARTNERSHIP FOR POLICY INTEGRITY, 5 (April 2, 2014).

<sup>18</sup> See Jonathan J Buonocore, *et al*, *A decade of the U.S. energy mix transitioning away from coal: historical reconstruction of the reductions in the public health burden of energy*, ENVIRON. RES. LETT. 16 (2021); American Lung Association, *Public Policy Positions on Energy and Transportation* (June 22, 2019), <https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-energy>; American Lung Association, *Particle Pollution* (last visited Dec. 20, 2021), <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>; Helinow J. Johnson, *et al.*, *How Harmful Is Particulate Matter Emitted from Biomass Burning? A Thailand Perspective* (2019) (“A large body of epidemiological evidence has clearly demonstrated that short- and long-term exposure to particulate matter (PM) is associated with increased morbidity and mortality.”); see also 30 V.S.A. § 8001(a)(5) (emphasis added) (“Protecting and promoting air and water quality in the State and region through the displacement of those fuels, including fossil fuels, *which are known to emit or discharge pollutants.*”).

<sup>19</sup> See notes 8, 11, 17 & 18, *supra*; see also Sasan Saadat, *et al*, *Rhetoric Vs. Reality: The Myth of “Renewable Natural Gas” for Building Decarbonization*, Sierra Club & Earth Justice at 2 (2020).

Draft CEP thus<sup>20</sup> mischaracterizes those fuels as “clean” by failing to address the pollution they cause. The Draft CEP should be revised to accurately and transparently reflect the greenhouse gas emissions and toxic air pollution caused by the thermal fuels promoted by the CEP.

### ***The CEP Should Strive for 100% Carbon-Free Thermal Energy***

As noted, the Draft CEP sets a goal of 70% renewable thermal energy by 2042.<sup>21</sup> However, that target is too low given the outsized emissions generated from Vermont’s thermal sector. The CEP should adopt a goal of 100% carbon-free thermal energy by 2042. In August 2021, the Intergovernmental Panel on Climate Change (“IPCC”) released its’ Sixth Assessment Report,<sup>22</sup> which unequivocally concluded that global warming of 1.5°C and 2°C – the highest levels of warming permitted under the Paris Climate Agreement<sup>23</sup> – will be exceeded within the coming decades.<sup>24</sup> We know that “[t]here will be an increasing occurrence of some extreme events unprecedented in the observational record with additional global warming, even at 1.5°C.”<sup>25</sup> And we know that “every additional 0.5°C of global warming causes clearly discernible increases in the intensity and frequency” of such occurrences.<sup>26</sup> The IPCC was also clear that to fend-off the worst consequences of climate change, greenhouse gas emissions must be rapidly reduced *now* and become *net-negative*<sup>27</sup> by approximately 2050.<sup>28</sup> This decade is humanity’s final opportunity to avert the worst impacts of climate change. Vermont should set the ambitious and necessary goal of acquiring 100% of its thermal energy from carbon-free energy sources so that Vermont can do its part to avert the worst impacts of climate change.

### ***The CEP Should Commit to Concrete Steps to Achieve Weatherization at Scale***

The Draft CEP should identify a concrete plan the State can undertake to achieve weatherization at scale in Vermont. The Draft CEP correctly recognizes the critical role of weatherization in achieving greenhouse gas reductions and thermal affordability and security.<sup>29</sup> Its goal of

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<sup>20</sup> Draft CEP at ES-18.

<sup>21</sup> *Id.* at ES-15.

<sup>22</sup> See IPCC, *AR6 Climate Change 2021: The Physical Science Basis* (2021) (hereinafter, the “IPCC Report”), <https://www.ipcc.ch/report/ar6/wg1/#SPM>.

<sup>23</sup> See United Nations, Climate Change, The Paris Agreement (last visited Dec. 20, 2021), <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

<sup>24</sup> See IPCC Report, Summary for Policymakers at 15-18.

<sup>25</sup> *Id.* at 19.

<sup>26</sup> *Id.*

<sup>27</sup> The IPCC defines “net negative CO2 emissions” as being “reached when anthropogenic removals of CO2 exceed anthropogenic emissions.” See IPCC Report, Summary for Policymakers at 15 n.23.

<sup>28</sup> See, e.g., *id.* at 15-18.

<sup>29</sup> Draft CEP at 6-10 & ES-16.

weatherizing 90,000 homes between 2022 and 2030<sup>30</sup> is thus commendable. However, and as the Draft CEP notes, Vermont’s previous weatherization efforts have fallen far short<sup>31</sup> and barriers still exist to achieving the Draft CEP’s new weatherization goal.<sup>32</sup> The Draft CEP explores the root causes of those barriers,<sup>33</sup> supports strategies that have been recommended by others,<sup>34</sup> describes existing programs that have not yet achieved weatherization at scale, and refers to steps that might be taken to determine funding options.<sup>35</sup> The Draft CEP does not, however, propose concrete solutions the State can implement to achieve weatherization at scale. The State can play a leading role in creating workforce development programs and incentives, helping residents access capital, and in developing State programs and requirements to facilitate weatherization for homeowners and renters. The Draft CEP should commit to the concrete steps it will take to achieve weatherization at scale.

### ***The CEP Should Propose a 200-Amp Service Requirement for New Residential Homes***

The Draft CEP correctly notes that homes equipped with 200-amp service will be capable of supporting electrification of thermal and vehicle charging loads.<sup>36</sup> The marginal cost of installing such service during new construction is far less than the additional costs incurred to retrofit an already constructed building – especially under a social cost of carbon calculation, which was not performed in the Draft CEP. The Draft CEP states that the Department of Public Service “should *consider* requiring residential new construction to install a minimum of 200-amp service.”<sup>37</sup> Rather than merely considering such a policy, the CEP should unequivocally propose 200-amp service in new residential construction.

### ***The CEP Should Measure Thermal Costs Using the Social Cost of Carbon***

The Draft CEP defines what a social cost of carbon measure is and explains the utility of using such a measure,<sup>38</sup> but does not then assess the societal costs of thermal fuels, technologies, or emissions.<sup>39</sup> Nor does the Draft CEP assess the societal costs of failing to achieve weatherization at scale, equipping new homes with 200-amp service, or constructing new buildings according to efficiency building codes. Such calculations would provide a clear-eyed

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<sup>30</sup> *Id.* at 6-1 & ES-16.

<sup>31</sup> *Id.* at ES-16 & 6-1, 6-11.

<sup>32</sup> *Id.* at 6-2, 6-11 through 6-13.

<sup>33</sup> *Id.* at 6-11 through 6-13.

<sup>34</sup> *Id.* at 6-14 & 6-15.

<sup>35</sup> *Id.* at 6-15 through 6-17, 6-22.

<sup>36</sup> *Id.* at 6-27.

<sup>37</sup> *Id.* (emphasis added).

<sup>38</sup> *Id.* at 2-11.

<sup>39</sup> *Id.* at 6-6, 6-7, 6-9

assessment of the financial costs of failing to take immediate policy action and the converse value of taking such actions.

## ELECTRICITY

The Draft CEP sets the goal of meeting 100% of Vermont’s electricity needs with carbon-free resources by 2032, of which at least 75% will come from renewable energy. The CEP can be strengthened with the following revisions.

### *The CEP Should Accurately Reflect Electricity Emissions*

As with Vermont’s thermal sector, the electricity sector should accurately account for its true greenhouse gas emissions. Before the sale of renewable energy credits in 2019, more than 8% of Vermont’s electricity mix was supplied by the combustion of biomass and landfill gas fuels.<sup>40</sup> Those fuels produce significant greenhouse gas emissions and toxic pollutants,<sup>41</sup> but the Draft CEP nonetheless considers them to be zero or near-zero emissions. The CEP should be revised to accurately state the true greenhouse gas emissions profile of Vermont’s electricity sector, and recommended decarbonization pathways should be guided by that accurate data.

### *The CEP Should Identify Concrete Steps to Fully Decarbonize the Electricity Sector and Prepare for New Transportation and Thermal Loads*

The CEP should be revised to identify and provide specific and actionable steps the State can take to achieve a fully decarbonized electricity sector and to prepare for increased loads driven by vehicle and building electrification. The Draft CEP sets a goal of “fully decarbonizing” the electric sector,<sup>42</sup> but does not articulate the concrete steps necessary to achieve that commendable target. Nor does the Draft CEP identify specific steps Vermont can take to bring new clean electricity online to support transportation and thermal electrification. Achieving a 100% carbon-free electricity sector is essential because clean electricity will enable Vermont to electrify the transportation and thermal sectors and thereby drive an economy-wide decarbonization strategy. The Draft CEP acknowledges this fact, stating that “all [decarbonization] scenarios share common features such as relying upon deep decarbonization of the electricity sector coupled with extensive electrification of the thermal and transportation sectors in order to achieve Vermont’s 2030 and 2050 GHG emissions reduction targets.”<sup>43</sup> Moreover, “as EV and heat pump deployment increases across the region, Vermont utilities will

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<sup>40</sup> *Id.* at 7-23.

<sup>41</sup> *See* notes 8, 11, 17 & 18, *supra*.

<sup>42</sup> Draft CEP at ES-10.

<sup>43</sup> *Id.* at 2-5; *see also id.* at 7-1.

need additional carbon-free resources.”<sup>44</sup> Additional and distributed clean energy generation is also required by Vermont law.<sup>45</sup> Despite these observations and requirements, the Draft CEP merely encourages general load management<sup>46</sup> without identifying actionable strategies to fully decarbonize Vermont’s electricity sector and bring new clean electricity resources online. The Draft CEP should be revised to identify such concrete steps.

***The CEP Should Discourage a Portfolio Standard Allowing the Retirement of Nuclear Attributes to Satisfy Clean Energy Requirements***

The Draft CEP should not allow utilities to retire nuclear attributes to satisfy clean energy requirements because such a policy could discourage new solar and wind generation. The Draft CEP recommends that the Public Utility Commission consider potential revisions to Vermont’s renewable energy standard and recommend a “carbon-free portfolio standard,” of which renewable energy would constitute only 75 percent.<sup>47</sup> It appears that the Draft CEP contemplates that nuclear power could qualify as clean energy and constitute approximately 25% of Vermont’s load under this new “carbon-free” portfolio standard.<sup>48</sup> The CEP should be revised to clarify that utilities should not be permitted to satisfy portfolio requirements by retiring nuclear attributes because such a policy would discourage the creation of new clean energy sources – like wind and solar – by financially rewarding existing nuclear generation.

There can be viable policy reasons for maintaining existing nuclear power generation facilities that are demonstrated to be capable of safe operation. However, and in addition to the considerations above, it is critical that any public policies designed to support existing nuclear power generation be carefully crafted to benefit only those units that not only demonstrate the capability of safe operation but also would be at risk of retirement without such support.

Next generation nuclear technology, both fission and fusion, is advancing and could present real potential, with the possibility of mitigating some of the concerns related to nuclear waste, safety, water consumption and other harms associated with traditional nuclear generation. However, such technology is not yet deployable. And before Vermont considers any program that contemplates next generation nuclear technologies, it must first undertake a public process to consider and verify the eligibility of any specific technology based upon demonstrated

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<sup>44</sup> *Id.* at 7-35.

<sup>45</sup> 30 V.S.A. § 8001(a)(7) (“Providing support and incentives to locate renewable energy plants of small and moderate size in a manner that is distributed across the State’s electric grid, including locating such plants in areas that will provide benefit to the operation and management of that grid through such means as reducing line losses and addressing transmission and distribution constraints.”).

<sup>46</sup> Draft CEP at 5-26.

<sup>47</sup> *Id.* at 7-38.

<sup>48</sup> *Id.* at 7-35.





For a thriving New England

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compliance with applicable environmental, public health and safety, environmental justice, and other criteria and considerations.

Thank you for your consideration. Please do not hesitate to reach out if we may be of assistance.

Sincerely,

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