

**UNITIL ENERGY SYSTEMS, INC.**

**DIRECT TESTIMONY**

**OF**

**CARRIE GILBERT AND KEVIN PIERCE**

**EXHIBIT GPP-1**

**New Hampshire Public Utilities Commission**

**Docket No. DE 22-\_\_\_\_\_**

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### Exhibits

Exhibit GPP-2: Indirect Benefits of Kingston Solar Project Report

Exhibit GPP-3: Resume of Carolyn C. Gilbert

Exhibit GPP-4: Resume of Kevin R. Pierce

1   **I. INTRODUCTION**

2   **Q.     Ms. Gilbert, would you please state your name, position, and business address?**

3   A.     My name is Carolyn C. Gilbert and I work as a Managing Consultant for Daymark  
4         Energy Advisors (“Daymark”), 370 Main Street, Suite 325, Worcester, MA 01608.

5   **Q.     Please summarize your professional experience and qualifications.**

6   A.     I have been with Daymark since 2007. I am an expert in state and regional  
7         renewable resource development, economics, and policy. My work focuses on  
8         renewable project development and economics, value of distributed energy  
9         resources, asset valuation, and competitive resource procurement. Exhibit GPP-3  
10        provides my professional resume.

11  **Q.     Have you previously testified before the Commission?**

12  A.     No, I have not testified before the New Hampshire Public Utilities Commission (the  
13         “Commission”). I have testified before the Utilities Commissions in Arkansas,  
14         North Carolina, Georgia, Maryland, Rhode Island, and FERC. My appearances are  
15         included in Exhibit GPP-3.

16  **Q.     Mr. Pierce, would you please state your name, position, and business address?**

17  A.     My name is Kevin R. Pierce and I work as a Senior Consultant for Daymark Energy  
18         Advisors. My business address is 370 Main Street Suite 325, Worcester,  
19         Massachusetts, 01608

1   **Q.     Please summarize your professional experience and qualifications.**

2   A.     I have a B.A. in Political Science from the University of Maine as well as an M.A.  
3           in Law and Diplomacy from the Fletcher School at Tufts University. After  
4           graduating from the Fletcher School, I joined Daymark Energy Advisors in 2019 as  
5           an Analyst. At Daymark, I work on both electric and natural gas projects, including  
6           providing regulatory support and regulatory review for a number of clients. In my  
7           work, I have supported a variety of analyses for various renewable energy projects,  
8           including several economic benefits reports. I have also worked with members of  
9           the Daymark team to evaluate long-term power supply agreements, including solar  
10          PPAs for three electric cooperatives. Additionally, I have worked to assist New  
11          Jersey's Board of Public Utilities in developing and designing their competitive  
12          solar procurement process and criteria. Exhibit GPP-4 provides my professional  
13          resume.

14   **Q.     Have you previously testified before the Commission?**

15   A.     No.

16   **Q.     Please summarize Daymark and its business.**

17   A.     Daymark provides integrated policy, planning, and strategic decision support  
18          services to the North American electricity and natural gas industries.<sup>1</sup> Daymark  
19          serves a diverse clientele from our offices in Worcester, Massachusetts by providing

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<sup>1</sup> Daymark Energy Advisors is the new name of the firm previously known as La Capra Associates. The name change occurred on November 9, 2015.

1 consulting services to organizations involved with energy markets, including  
2 renewable energy producers, private and public utilities, transmission owners,  
3 energy producers and traders, energy consumers and consumer advocates, regulatory  
4 agencies, and public policy and energy research organizations. Our technical skills  
5 include cost allocation, rates and pricing, power market forecasting models and  
6 methods, economics, management, planning, energy procurement, contracting and  
7 portfolio management, and reliability assessments. Our experience includes  
8 detailed analyses of energy and environmental performance of electric systems,  
9 economic planning for transmission and distribution, and market analytics.

10 **Q. What is the purpose of your testimony and how is it organized?**

11 A. The purpose of our testimony is to discuss and quantify the indirect benefits  
12 provided by the Kingston Solar project. We discuss the results of three different  
13 analyses, quantifying economic benefits, emissions reduction benefits, and Demand  
14 Reduction Induced Price Effects (“DRIPE”) benefits. We summarize our analysis  
15 and findings in the following sections. A detailed description of our analysis and  
16 results is attached as Exhibit GPP-2.

17 **II. ECONOMIC BENEFITS**

18 **Q. How was the economic benefits analysis performed?**

19 A. Daymark performed its economic benefits analysis using the IMPLAN input-output  
20 model to estimate the direct, indirect, and induced economic impacts to a region  
21 resulting from the development, construction, and operation of a project.

1    **Q.    What inputs were used in the IMPLAN model?**

2    A.    Daymark was provided with the total cost of the Kingston Solar project by Unitil,  
3           broken into spending categories. Within certain categories, Daymark and Unitil  
4           discussed the breakdown of costs into labor and materials, to determine what could  
5           be reasonably sourced from within New Hampshire. For example, it is unlikely the  
6           solar panels or inverters will be manufactured in New Hampshire, therefore the  
7           investment in these materials was not considered in the analysis. On the other hand,  
8           construction supervision and labor could reasonably be sourced from New  
9           Hampshire firms, and was included in the analysis.

10   **Q.    What were the results of the analysis?**

11   A.    As shown in greater detail in the attached report, the IMPLAN analysis estimates  
12           approximately \$11.2 million dollars of direct, indirect, and induced impacts to New  
13           Hampshire. This value is a present value figure in 2023 USD. Additionally, the  
14           project can be expected to support approximately 87 direct, indirect, and induced  
15           jobs in the state through the 30-year operational life.

16   **III.    AVOIDED EMISSIONS BENEFITS**

17   **Q.    What are the avoided emissions benefits?**

18   A.    Adding a solar project to the New Hampshire electric grid has the effect of  
19           displacing emitting generation resources. This results in reduced CO<sub>2</sub> and NO<sub>x</sub>  
20           emissions. The reduction in emission results in societal benefits in the form of

1 health benefits, reductions in impacts of climate change, and reduced environmental  
2 impacts.

3 **Q. Can you describe the avoided emissions analysis?**

4 A. We have largely followed the methodology used in the 2021 Avoided Energy  
5 Supply Components in New England Report (the “AESC Report”). This report was  
6 developed to help energy efficiency program administrators in New England  
7 understand the benefits of their initiatives and is a respected publicly available  
8 source on this topic.

9 There are two steps to calculating the emissions reduction benefit of the project.  
10 The first step is calculating the amount of emissions that will be avoided by the  
11 project and the second step is calculating the value of the avoided emissions. The  
12 2021 AESC Report combines these steps and calculates a per kWh benefit for each  
13 unit of energy that was utilized in the calculation. From there, we multiplied the  
14 \$/kWh value of the avoided emissions by the expected generation of the project in  
15 summer on- and off-peak, as well as winter on- and off-peak.

16 **Q. What was the value of avoided CO<sub>2</sub> that you used in your analysis?**

17 A. We utilized the social cost of carbon (“SCC”) as the value of avoided CO<sub>2</sub> in our  
18 analysis. The SCC is an estimate of the cost of the damage that is avoided by  
19 reducing carbon emissions. The federal government has developed an estimate of  
20 the SCC and has selected a value to use in agency decision making. We have utilized

1 the same SCC as currently used by the Biden administration in its decision making.

2 The history of the SCC is discussed in more detail in Exhibit GPP-2.

3 **Q. What were the results of the analysis?**

4 A. The results of our emissions analysis are shown below in Table 1. This shows a  
5 total societal benefit of over \$1.8 Million when CO<sub>2</sub> and NO<sub>x</sub> benefits are combined  
6 over the operating life of the project.

7 **Table 1: Emissions Benefit Summary**  
8

	Total Emissions Savings (tons)	NPV Emissions Savings (\$)
CO <sub>2</sub>	57,300	\$1,775,800
NO <sub>x</sub>	0.15	\$ 44,100

9

10 **IV. DEMAND REDUCTION INDUCED PRICE EFFECTS (“DRIPE”)**  
11 **BENEFITS**

12 **Q. How was the DRIPE benefit analysis performed?**

13 A. The DRIPE analysis was performed by adjusting the 2021 AESC Report DRIPE  
14 figures to appropriately fit them to a solar project. Three primary adjustments were  
15 made to the 2021 AESC DRIPE analysis: an adjustment to capture the impact of the  
16 difference in energy, peak demand, and capacity characteristics of a solar project  
17 verses energy efficiency, adjusting the figures to account for a 2024 start year, and



1 updating the DRIPE findings to account for changes in the pricing of energy and  
2 capacity.

3 **Q. What were the inputs used in the analysis?**

4 A. The inputs used in the analysis were the 2021 AESC Report, the 2021 AESC  
5 appendices, ISO-New England (“ISO-NE”) market futures, ISO-NE Capacity  
6 clearing prices, and the ISO-NE 2022 CELT report.

7 **Q. What were the results of the analysis?**

8 A. The DRIPE analysis for the solar project concluded that the aggregate benefits to  
9 New Hampshire load would be around \$566,963 Net Present Value (“NPV”) as  
10 shown on the table below. If the benefit is allocated across New Hampshire load it  
11 would result in approximately a \$0.0067/MWh reduction in LMP pricing in New  
12 Hampshire.

Intrastate DRIPE Benefits			
	Unitil Solar Project Output (MWh)	DRIPE Benefit (\$/MWh)	Benefits to NH Load (Nominal; \$)
2024	9,617	15.56	149,675
2025	9,569	12.68	121,316
2026	9,521	10.83	103,155
2027	9,472	11.04	104,591
2028	9,424	7.56	71,220
2029	9,376	7.47	70,081
2030	9,328	6.47	60,395
2031	9,280	3.14	29,145
2032	9,232	-	-
2033	9,184	-	-
2034	9,136	-	-
2035	9,088	-	-
2036	9,040	-	-
2037	8,992	-	-
2038	8,944	-	-
2039	8,895	-	-
2040	8,847	-	-
2041	8,799	-	-
2042	8,751	-	-
2043	8,703	-	-
2044	8,655	-	-
2045	8,607	-	-
2046	8,559	-	-
2047	8,511	-	-
<b>Total:</b>			<b>709,578</b>
<b>NPV:</b>			<b>566,963</b>

1

2    **V.    CONCLUSION**

3    **Q.    Does this conclude your testimony?**

4    **A.    Yes, it does.**