

UNITIL ENERGY SYSTEMS, INC

REBUTTAL TESTIMONY OF
THOMAS PALMA, ESQ.

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

DE 09-137

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TABLE OF CONTENTS

I. INTRODUCTION	PAGE 1
II. SAU 16	PAGE 2
III. STRATHAM FIRE STATION	PAGE 2
IV. CRUTCHFIELD	PAGE 6

LIST OF SCHEDULES

Schedule TP-1: Diagram of PV Design Scenario for Stratham

I. INTRODUCTION

Q. Please state your name, title and business address.

A. My name is Thomas Palma, Esq. I am the Manager of Distributed Energy Resources, Planning and Design, for Unitil Service Corp. (“UES” or “Company”). My business address is 325 West Road, Portsmouth, New Hampshire.

Q. Please summarize your qualifications and current position.

A. I have been employed by Unitil since November, 2009. Previously I worked for the New Hampshire Electric Cooperative. During my career I have gained extensive knowledge of renewable energy systems and energy efficiency systems. I have created renewable energy programs and researched renewable energy and energy efficiency technologies. I have also managed projects regarding the above-mentioned topics. I hold a Bachelor of Science Degree in Mechanical Engineering from the University of MA, Amherst and a Juris Doctorate Degree from Suffolk University. I am also a member of the MA bar. I have also been active in leadership roles in various organizations including the New Hampshire Sustainable Energy Association, the Northeast Sustainable Energy Association, and the Cooperative Research Network.

I appeared before the PUC in docket DE 09-054, providing comments relative to the Residential Renewable Energy Generation Incentive Program.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to Mr. McCluskey’s testimony and recommendations to the Commission. In my testimony I will cover the following:

- Dispatching the SAU 16 micro-turbine during summer critical peak events;
- Ownership and a new financial model for the Stratham Fire Station Solar PV project;
- Update of the Solar Hot Water System for the Crutchfield Place facility of the Concord Housing Authority.

1 **II. SAU 16**

2 **Q. In his testimony, Mr. McCluskey recommended Commission approval for the SAU**
3 **16 DER project, subject to the condition that the micro-turbine be operated in the**
4 **summer peak period. Please explain if the micro-turbine in the SAU 16 project will**
5 **operate during summer critical peak events?**

6 A. Yes. The project sponsor, NHSEP, has implemented the necessary hardware to allow for
7 complete control of the turbine via analog phone line. The system can be controlled by
8 UES. The exhaust run has been upgraded to a double-walled oversize stainless pipe to
9 permit long runs in the summer without concerns for overheating or efficiency drops. In
10 addition, NHSEP has agreed to include in the definitive Customer Participation
11 Agreement provisions allowing the Company to dispatch the micro-turbine to meet
12 critical peak needs during the summer. The Company will develop criteria and
13 procedures to provide for the dispatch of the generating unit during summer critical peak
14 events.
15

16 **III. STRATHAM FIRE STATION**

17 **Q. In his testimony, Mr. McCluskey recommended that the Commission not approve**
18 **the Stratham Solar PV system on the grounds that the project economics were**
19 **insufficient. How has the Company addressed this recommendation?**

20 A. The Company has been in contact with the Town of Stratham seeking to find ways to
21 improve the project economics and, particularly, to increase the benefits to the non-
22 participants. Based on these discussions, we have revised the proposed structure,
23 configuration and execution of the project in three ways. First, we agree that the Solar
24 PV facility will be owned by the Company, which enables us to secure the full tax
25 benefits (Investment Tax Credit and Accelerated Depreciation) for the project, which
26 significantly improves the overall economics. Second, under Company ownership the
27 project will be reconfigured so as to provide energy and capacity to offset Company
28 system losses, thereby resulting in a significant increase in the benefits which accrue to
29 non-participants. The project will no longer be a net-metered facility. The Company will

1 make lease payments which provide a much lower allocation of benefits to Stratham than
2 originally proposed. And finally, the Company will secure the equipment and installation
3 through a competitive bidding process which is expected to significantly reduce the
4 project cost from the earlier estimate.
5

6 **Q. Have Solar PV system prices declined since the system was originally quoted?**

7 A. Yes. The original quote was for a 39.39 kW system at an installed price of \$7.80 per
8 Watt totaling \$307,174. Declining Solar PV panel prices has lead UES to estimate that
9 this system will be in the \$6.00 to \$7.00 per Watt installed price range based on
10 competitive bids. This totals \$240,000 at the low end and \$280,000 at the high end. UES
11 is planning on installing an approximately sized system of 40 kW. The PSNH 51.3 kW
12 system was installed at \$6.78 per Watt.
13

14 **Q. Please explain the new ownership proposal established for the Solar PV project and**
15 **why is UES making this proposal?**

16 A. Under the original filing, Stratham Fire Station would own and operate the Solar PV
17 system. Since Stratham is a municipality, it is not eligible for the 30% federal investment
18 tax credit. It is also not eligible to take advantage of tax depreciation benefits such as
19 MACRS (a five year accelerated depreciation schedule). UES, on the other hand, has the
20 proper business structure to be eligible for both of these tax benefits. This would reduce
21 the project cost significantly.
22

23 **Q. Under the new proposal, who would be responsible for maintenance?**

24 A. UES would be responsible for maintenance of the system but Stratham would be
25 responsible for maintenance of the building and roof. System maintenance includes a
26 check up each year for the first two years and ongoing monitoring of the system to make
27 sure it is performing properly. System maintenance/ monitoring is estimated at \$500 per
28 year, sufficient to cover the cost of hiring a qualified Solar PV professional to undertake
29 an annual inspection. A typical inverter warranty is 10 years. We have assumed that a

1 new inverter(s) will need to be installed at the end of the warranty period (estimated to be
2 at the beginning of year 11). This is estimated at 15% of the installed project cost. This
3 is, however, a conservatively high estimate as prices on inverters are declining as
4 technology improves. In the event of an out-of-installation warranty repair, UES would
5 have to pay for labor while the parts will be covered under the parts warranty.
6

7 **Q. Is UES permitted to own distributed generation facilities, and if so, who would**
8 **receive the electricity from the project?**

9 A. Under PUC Chapter 374-G, electric utilities are permitted to own distributed generation
10 facilities where the energy produced is used as an offset to distribution system losses or
11 for the utility company's own use. UES will receive the electricity from the Stratham
12 Fire Station. The output from the Solar PV system will be connected on UES side of the
13 meter, and will be used to offset the Company's distribution line losses. Please see the
14 attached Schedule TP-1, which diagrams the original and new connection scenarios.
15

16 **Q. How will Stratham be compensated for participating in the project under the new**
17 **proposal?**

18 A. Stratham will be compensated via a 20 year roof lease. We are proposing a year 1 roof
19 lease rate of \$4,600, with a provision that provides for escalation of the lease rate based
20 on the escalation of Default Service prices. The lease rate is approximately equal to the
21 current Default Service price times the expected kWh production, e.g. $\$0.09 \times 1,300$
22 $\text{kWh/kW} \times 40 \text{ kW} = \$4,600$. The rate will be adjusted annually by multiplying the year 1
23 roof lease rate times the ratio of the current year Default rate on January 1 and the prior
24 year Default rate on January 1.
25

26 **Q. Please compare the Stratham's benefits from the original and new proposal and**
27 **show how Stratham will be compensated for participating in the project.**

A. Under the original proposal from Solar Market, Stratham would have offset in year one 51,758 kWh and would have saved \$7,376. Under the new proposal, Stratham would receive \$4,600 in year one as stated above.

Q. Will ownership of the system be turned over to Stratham, and if so, when will this occur, and what will the price be?

A. Ownership of the system will be turned over to Stratham at the end of the 20 year roof lease. UES preference is to turn this system over to Stratham via a sale price of \$1.00. IRS regulations regarding depreciation must be reviewed to determine if this approach is feasible. If not, an alternative approach will be negotiated with Stratham.

Q. Is Stratham required to have this new proposal approved at a Town Meeting?

A. It is the Company's understanding that the new proposal and a formal contract may be signed by the Select Board and the town's attorney as long as the contract includes a non-appropriations clause. We understand such language was used in the development contract for the SAU 16 project. Regardless, it appears that Stratham will bring the proposal to a Town Meeting.

Q. Please summarize in tabular form the low and high estimated cost of the system, the investment tax credit, and depreciation as it affects UES.

A. The table below provides a summary of the expected costs and tax credit benefits. For purposes of the revenue requirement modeling provided in Mr. Gantz' testimony, we have used the high cost estimate.

	low	high
Installed Cost of Equipment (excluding Unitil costs)	\$240,000	\$280,000
Investment Tax Credit	\$72,000	\$84,000

Net Cost	\$168,000	\$196,000
Depreciation Benefit	\$67,200	\$78,400
UES Tax Rate 40%		

III. CRUTCHFIELD

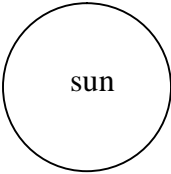
Q. Please provide an update on the Crutchfield project.

A. The Company initiated further conversations and visits with the Concord Housing Authority to clarify the project details and configuration. Based on those conversations we have clarified that the current hot water system utilizes both a natural gas heater and an electric heater. It is therefore not possible for us to determine at this time the extent to which the proposed solar hot water system would displace electricity or natural gas and therefore we cannot estimate the benefits to the Company's electric customers. It was our original understanding that the natural gas water heater would be decommissioned, however this no longer appears to be the case. Based on this updated information, it is appropriate to withdraw this project from further consideration at this time by the Commission.

IV. CONCLUSION

Q. Does that complete your testimony?

A. Yes, it does.



**STRATHAM FIRE STATION PROJECT –
UNITIL OWNERSHIP**

