

TOWN OF BEDFORD
December 16, 2021
ENERGY COMMISSION MINUTES

A meeting of the Bedford Energy Commission was held on Thursday, December 16, 2021 in the Town Meeting Room, 10 Meetinghouse Road.

I. Call to Order: Vice Chairman Bandazian opened the meeting at 7:00 PM

Present: Chris Bandazian (Vice Chair), Sue Thomas (Town Council Liaison), Lori Radke (Town Council Alternate), Andrew Gillis, Bill Foote (School Board Alternate), Tom Elwood, John Schneller (School Board Liaison)

Absent: John Russell (Chair), Bing Lu, Bart Fromuth

II. Quorum Count (5)

III. Approval of Minutes – November 18, 2021

Mr. Bandazian stated that on page 2, 3rd paragraph down, it says, ‘Mr. Bing’ and it’s ‘Mr. Lu’.

MOTION by Mr. Foote to approve the November 18, 2021 minutes as amended. Seconded by Mr. Gillis. Vote taken – all in favor with Mr. Schneller and Councilor Thomas abstaining.

IV. Guest Presentation: Community Power Coalition NH Presentation – moved to January

V. Reports of Members and Committees

a. School projects

Mr. Foote stated that they are going to have a separate warrant for the HVAC for Peter Woodbury, Riddlebrook, Memorial, and McKelvie. They are hoping to do a 20-year bond. Mr. Schneller stated that the initial tax impact is going to be two to three cents and then going back to two in the out years. Mr. Foote stated that they were looking at numbers of .7%. Councilor Radke wanted to know how the schools were heated and Mr. Foote stated that Riddlebrook is heated with oil and the other schools use gas. Mr. Bandazian wanted to know if there was some energy savings with more efficient components. Mr. Foote confirmed that there would be. Mr. Bandazian thought that would reduce whatever the tax impact was.

IV. Old Business

a. Solsmart – www.thesolarfoundation.org

1. Jillian Harris : Bedford Assistant Planning Director - Draft Solar Zoning Amendment presentation to the Energy Commission on 12.16.2021
2. Amendment No. 1 Relative to Solar Energy Systems

Ms. Harris stated that the Planning Board was currently discussing this zoning amendment for solar energy systems and they would like to get feedback and input from the Energy Commission. Ms. Harris stated that the zoning amendment was intended to address the use of solar and to establish local standards for siting and placement. The current zoning ordinance they have encourages the use of solar and other renewable energy systems in the purpose statement. They are also allowed as an accessory use by right in all districts, but it doesn’t offer specific standards or definitions that give clear guidance on how those systems are permitted within the community. They’ve been working on this since their September workshop where they presented the idea of

having a solar zoning amendment and they were supportive of moving forward with it. Much of the zoning amendment is derived from the Solsmart recommendations. There are code considerations that they provided and a lot of the language in the amendment is from what they recommended. She went through the details of the amendment.

Amendment No. 1 Relative to Solar Energy Systems

I. Amend Article 275-6 Definitions, to add new definitions as follows:

1. **SOLAR ENERGY SYSTEM**—Any device or structural design feature, including accessory equipment associated with the system, whose primary purpose is to provide for the collection, storage, or distribution of solar energy.
 - a. **Roof-mounted solar energy system** – A solar energy system that is structurally mounted to the roof of a building or structure.
 - b. **Ground-mounted solar energy system** – A solar energy system that is structurally mounted to the ground and is not roof-mounted.
 - c. **Small-Scale Solar energy system** – A solar energy system that occupies 1,750SF of surface area or less.
 - d. **Medium-scale solar energy system** – A solar energy system that occupies more than 1,750 SF but less than 20,000 SF of surface area.
 - e. **Large-Scale Solar energy system** – A solar energy system that occupies more than 20,000 SF of surface area.

II. Amend Article 275-21 to add new subsection K – Solar Energy Systems as follows:

K. Solar Energy Systems. Pursuant to the Authority provided in RSA 674:17(I)(j) and the purposes outlined in RSA 672:I-III-a, as amended, the purpose of this section is to facilitate the effective and efficient use of solar energy systems while protecting the public health, safety and welfare of the residents of the Town of Bedford. Solar Energy Systems are permitted in all Zoning Districts subject to the following provisions: [**Added DATE**]

1. A building permit is required for all solar energy systems constructed, reconstructed, installed, moved or maintained within the Town of Bedford and shall comply with the following regulations:
 - a) Zoning – **Roof-mounted and Small-Scale Ground-mounted solar energy systems** are a permitted accessory use within all zones, whether as part of a structure or incidental to one or more structures.
 - b) Height – **Roof-mounted solar energy systems** are exempt from maximum building height limits outlined in Section 275–Attachment 1 (Table 1–Table of Dimensional Regulations) and Section 275–Attachment 3 (Table 3–Table of Performance Dimensional Standards).
Ground-mounted solar energy systems may be up to 15 feet in height, measured from the natural grade at the base of the system to the highest point of the system, when oriented at maximum design tilt.
 - c) Setback – All **ground-mounted solar energy systems** shall comply with the setback requirements of the underlying zoning district and shall be measured from the closest point of the system, when oriented at maximum design tilt.
 - d) Yard – **Ground-mounted solar energy systems** accessory to a principal use in the RA, GR, and AR Districts shall be installed in the side or rear yard and in all other districts to the extent practicable.
 - e) Lot coverage and Impervious surface—The area covered by **ground-mounted solar energy systems**, where the ground beneath is permeable or pervious, shall not be included in calculations for lot coverage or impervious cover. All solar energy system installations shall comply with state and local permit requirements for land disturbance and alteration of terrain.

- f) Minimum construction standards—All **solar energy systems** shall conform to applicable building, electrical and fire codes.
 - g) Abandonment and Decommissioning – Solar energy systems shall be deemed to be abandoned if operations have discontinued for more than 6 months without the written consent of the Planning Director. An abandoned system shall be removed and the site restored within 6 months of abandonment.
2. The following criteria must be satisfied in order for the Planning Board to grant a Conditional Use Permit for a Solar Energy System:
- a) The use is specifically authorized by Section 275 – Attachment 2 as a conditional use;
 - b) The development in its proposed location will comply with all applicable requirements of the Bedford Site Plan Regulations not otherwise covered in this section, as well as specific conditions established by the Planning Board.
 - c) The use will not materially endanger the public health or safety;
 - d) The use shall comply with the buffer zone requirements in Section 275-21(F)(2) of the Bedford Zoning Ordinance.
 - e) The use shall provide adequate screening to ensure adjacent property values are not adversely impacted. The required screening may consist of existing vegetation and/or the installation of site specific screening such as evergreen landscaping, suitable fencing or a combination thereof. The screening shall be maintained during the operative lifetime of the solar energy system Conditional Use Permit. As deemed appropriate, all applications shall submit a detailed buffering plan demonstrating how the proposed solar energy system will be incorporated into the local landscape so that effective screening is provided along public ways and from abutting views. The plan should outline the visual and aesthetic impact and a statement detailing potential significant glare onto abutting structures and roadways estimating interaction of sun to panel angle, time of year and visibility locations. The Planning Board may require reasonable mitigation, to include the angle of panels, details on the anti-reflective nature of the panel coating or any additional specific screening to minimize resulting impacts.
 - f) In granting a conditional use permit pursuant to this section, the Planning Board may impose any reasonable conditions or restrictions deemed necessary to carry out the intended purpose of this ordinance.
- III. Amend Attachment 2–Table 2, Table of Uses, in the “Accessory Use” category to add new uses entitled “Roof-mounted Solar Energy System” and “Small-Scale Ground-Mounted Solar Energy System” which shall be designated as permitted “P” in all Districts. Roof-mounted Solar Energy Systems and Small-Scale Ground-Mounted Solar Energy Systems shall be subject to the provisions of section 275-21K of this ordinance, which shall be included in the “Footnotes for Table of Uses: 41.”
- IV. Amend Attachment 2–Table 2, Table of Uses, in the “Accessory Use” category to add a new use entitled “Medium-Scale Ground-Mounted Solar Energy System” which shall be designated as permitted “P” in the Civic and Institutional (CI) District, Commercial (CO) District, Commercial-2 (CO2) District, Office (OF) District, Service Industrial (SI) District and Performance Standards (PZ) District; and permitted by “CU” Conditional Use Permit in the Residential Agricultural (RA) District, General Residential (GR) District, Apartment Residential (AR) District, Neighborhood Commercial (NC) District and Highway Commercial (HC) District. Medium-Scale Ground-Mounted Solar Energy Systems shall be subject to the provisions of section 275-21K of this ordinance, which shall be included in the “Footnotes for Table of Uses: 41.”
- V. Amend Attachment 2–Table 2, Table of Uses, in the “Commercial” category to add a new use entitled “Medium-Scale Ground-Mounted Solar Energy System” which shall be designated as permitted “P” in the Civic and Institutional (CI) District, Service Industrial (SI) District and Performance Standards (PZ) District; and designated as permitted by “CU” Conditional Use Permit in the Residential Agricultural (RA) District, General Residential (GR) District, Apartment Residential (AR) District, Neighborhood

Commercial (NC) District and Highway Commercial (HC) District. Medium-Scale Ground-Mounted Solar Energy Systems shall be subject to the provisions of section 275-21K of this ordinance, which shall be included in the “Footnotes for Table of Uses: 41.”

VI. Amend Attachment 2–Table 2, Table of Uses, in the “Commercial” category to add a new use entitled “Large-Scale Ground-Mounted Solar Energy System” which shall be designated as permitted “P” in the Civic and Institutional (CI) District, Service Industrial (SI) District and Performance Standards (PZ) District; permitted by “CU” Conditional Use Permit in the Residential Agricultural (RA) District, Commercial (CO) District, Commercial-2 (CO2) District, and Office (OF) District; and not permitted in the General Residential (GR) District, Apartment Residential (AR) District, Neighborhood Commercial (NC) District and Highway Commercial (HC) District. Large-Scale Ground-Mounted Solar Energy Systems shall be subject to the provisions of section 275-21K of this ordinance, which shall be included in the Footnotes for Table of Uses: 41.”

Table of Uses (Section 275–Attachment 2)

Accessory Use	RA	GR	AR	CI	CO	CO2	OF	NC	HC	SI	PZ
Roof-mounted Solar Energy System	P	P	P	P	P	P	P	P	P	P	P
Small-Scale Ground-mounted solar energysystem	P	P	P	P	P	P	P	P	P	P	P
Medium-scale ground-mounted solar energy system	C	C	C	P	P	P	P	C	C	P	P
Commercial Use											
Medium-Scale Ground-Mounted Solar Energy System	C	C	C	P	P	P	P	C	C	P	P
Large-Scale Ground-Mounted Solar Energy System	C	-	-	P	C	C	C	-	-	P	C

VII. Amend Article 275-61 Permitted Uses, to add a new subsection Y Solar Energy Systems as follows.

Y. Solar Energy Systems. Solar Energy Systems are subject to Section 275-21K.

Mr. Gillis mentioned small scale at 1,700 sq. ft. and wanted to know how they came up with that number. Ms. Harris stated that it was a recommendation of Solsmart and theirs did go up to 1,750 sq. ft., which is about a 10 kilowatt system. She thought it would encompass a lot of the accessory residential uses. Mr. Gillis stated that a lot of houses have really big roofs, and with a Tesla one it covers the whole roof, which put them above 1,700. Ms. Harris stated that it would be accessory permit. Mr. Gillis mentioned that the ground-mounted system would be up to 15 ft. high and stated that it didn’t cover the tilting type of rays, which most of those are at least 20 ft. high. He talked about the solar trackers. Ms. Harris stated that they would want to make sure the system was a subordinate structure, so it would still be considered accessory. Mr. Gillis thought the standard ground mount didn’t get above 15 ft.

Mr. Bandazian stated that the debate he’s having with himself over this is that in the Residential Zones they don’t have architectural standards like they have in the Performance Zone and Commercial Zone, so pretty much any building material goes as long as it passes code. They don’t have a maintenance code in Town. What he compares this to what would they do if there was an accessory detached garage or barn and how would they regulate that. If somebody wanted to have a galvanized steel barn they could do it as large as they wanted and as high as they wanted as long

as it met the dimensional requirements and setback requirements and met code. He wanted to know why they would be less restrictive with an ugly building like that than they would with this. Mr. Gillis gave an example where his friend built a massive steel structure in his backyard and he had to get a building permit for it. His friend explained that he's going to put solar panels on and they asked him if anyone was going to live in it and he said no, and they gave him the permit. It's as tall as his house. Mr. Schneller stated that that's exactly what he doesn't want built next to him; to have a huge 20 ft. array that can swivel around. Mr. Schneller wanted to know if Planning could tell them if a shiny galvanized barn 20 feet high would be permitted. Ms. Harris stated that it would be as an accessory structure if it met the dimensional requirements.

Mr. Elwood wanted to know what happens if they become obsolete. They have found that these panels, as technology changes, have become inefficient, was there any provision to get that out of the backyard. Mr. Gillis stated that no solar panel he has ever seen has ever failed. Mr. Foote wanted to know the current output of panels being produced today. Mr. Gillis stated that there are some that are almost 500.

Mr. Gillis pointed out that in the cluster developments in Bedford you aren't allowed to have solar panels on your roof. Somebody made that decision because they are 'ugly'. He thought it was unfortunate, because something like a Tesla solar roof is not ugly. Mr. Bandazian stated that his neighborhood association had restrictive covenants as did Greenfield Farms, and they both amended theirs. You can put them on the side of the house that doesn't face the road. Ground mount wouldn't be allowed. Councilor Radke stated that there is a huge ground mount at the corner of Joppa and Evergreen and she always wonders if the zoning allows it. Mr. Gillis stated that at his house he could cut down all the trees and build a giant square thing out of aluminum or shiny metal and there is no zoning that prevents that at the moment. The limit of height on the amendment wouldn't allow it. It would be nice to not set a restriction for height. Just have the height the height of any other structure you can build. That would be the easiest way around that. Mr. Bandazian stated that it would change over time, but he thought a resident ought to be able to use the light that lands on their property to fulfill the energy needs of their home. He thought it seemed reasonable to allow the people the right to do that with the energy that falls on their land.

Mr. Bandazian didn't think they had given Ms. Harris any clarity, but there is a debate, because the Town would allow offensive looking structures, other than these useful structures. Ms. Harris stated that they don't have architectural guidelines for the residential district, so if you wanted to put a big shiny building in your backyard and it met the dimensional criteria you could. Mr. Bandazian stated even in your front yard.

Mr. Schneller wanted to know if they should go back and revise the shiny galvanized building and restrict and refuse the use of that. If that's the debate then they should have that, but he didn't think they were talking about that. They are talking about whether they allow something else to be big and ugly.

Councilor Thomas stated that if they are taking the Solsmart recommendations, they say 10 feet, and it's gone up to 15 feet. Ultimately it's the Planning Board that approves this. Mr. Bandazian stated that Planning Board would make a recommendation that will go on the ballot. Ms. Harris stated that the public hearing would be in January.

Mr. Gillis stated that you could build a structure and put four legs on it and a little curved roof and now it becomes a shed, because now it's a building. If this was set to 15 feet, that's how people would get around it. They would build a 'shed' that has nothing in it and it's just something you put solar panels on. Councilor Radke wanted to know how high he would recommend. Mr. Gills stated that if you have to put a number he would say at least 30 feet. Mr. Bandazian stated that

there's a height restriction in general in residential zones. Ms. Harris stated that in the residential district the maximum building height is 35 feet, but she didn't think they would want to encourage ground mount to be as high as that. There is a balance between encouraging solar and reducing visual and aesthetic impacts to your neighbor. They talked about ground mounted panels in Town.

Councilor Radke wanted to know if there was still time to amend this. Mr. Bandazian stated that his wish would be not have shiny metal buildings or any other structure in the front yard, not just these. That's not a specific solar code, but if they are looking at visual impacts of ugly things, that's where he would start.

Mr. Gillis stated that the thing about the height is if you make something taller, you can make it narrower; it's the volume of your land that it takes up becomes less. Depending on where it's built and how it's built, it could be visually less. Mr. Bandazian stated that there's always a mechanism for relief. If it's a conditional use permit there's some level of Planning Board review, but you can get a variance if you needed to. Ms. Harris stated that they could look at the height and wanted to know if there were other aspects. Mr. Gillis stated that the rest of it looked really good.

Mr. Elwood mentioned Abandonment and Decommissioning and wanted to know who decides. Ms. Harris stated that this would be aimed at the large and medium scale and would probably come down to what company was primarily operating there. Mr. Elwood stated that it also applies to your own backyard too; it doesn't distinguish. Mr. Gillis thought that the Abandonment and Decommissioning was a good idea. Mr. Elwood didn't think it was going to be enforceable.

Mr. Bandazian stated that the other debate he was having with himself was it becoming a business that is like a home occupation. You have a huge array and you sell all the power; you don't use any of it yourself. Councilor Thomas thought to Chris's point, does somebody make their home in a residential area a business, because they are selling all of their power. Mr. Bandazian stated or 90% of it and does it need to be regulated that way. It doesn't have traffic; it's almost a level 1 occupation, but should there be some record that there's a business use of this residential property. Mr. Gillis thought the way it was structured with the small, medium and large he thought was pretty good. That's the reason he asked about the 1,700. He didn't think it was big enough. Ms. Harris thought they were trying to get it with the small, medium and large scale so that the bigger arrays would be considered commercial and would need to go through more permitting and site plan regulations. Mr. Gillis stated that he would like to see it raised a little bit, but if 1,750 is what Solsmart thinks is good then he gets it.

Councilor Radke wanted to know about screening. Ms. Harris stated that they get that at the Planning Board level, there is a section on buffering and screening. The Planning Board was concerned about that. It would require adequate screening to the adjacent property. Mr. Elwood wanted to know why that was only for conditional use and not for residential use. Ms. Harris thought with the smaller uses and for the requirement to be on the side or rear yard, it is hoped that there would be a balance between helping people to site them, so that it's useful for them and trying to protect the neighbors as well. Ms. Harris didn't know if they would want all of those to be coming to the Planning Board for a conditional use permit.

Mr. Gillis stated that they started out with having nothing in the building code for solar and that was the whole point of Solsmart; they needed something. Ms. Harris stated that it will be helpful especially for Planning to give people clear guidance on how they can site them and permit them.

b. Solar Projects

1. Transfer Station

A. 12.13.2021 meeting with Eversource on 3-Phase cost

Mr. Bandazian stated that this past Monday they had a virtual meeting with Rick Sawyer, Town Manager, Jeff Foote, and Public Works Director. He attended and Dan Weeks from Revision Energy attended and three people from Eversource to discuss extending 3-phase power down Chubbuck Road to the Transfer Station for running compactors as well as doing a PV project up there. They have a fairly firm number based on a number they have from their competitive bidders of \$910k to bring 3-phase power down. It does not include the cost of upgrading some utility poles, which would not exceed 33 poles. Mr. Gillis wanted to clarify that this was just to go to the corner; there are no extra transformers they have to put in. Mr. Bandazian stated that they just have to connect at Wallace Road. Not to exceed 33 poles at a cost of \$1,800 to \$2,600 a pole gross estimate. The commitment from the Feds of half a million for that project is firm, so it's a matter of how you make up that difference. The project probably would be economically viable and would have payback at some point that would make it worth taxpayers' while, but he thought they all had to take a step back, and look at it critically. There is a pretty tight window once they formally provide you with this estimate and that hasn't been done yet. It's only been talked about. There's a small payment that has to be made for them to go the next step, which is to start and stage the stuff and source the material. The real firm date would be hypothetically mid-May when there would be a substantial payment of 25% of total costs that's needed. If they don't move forward it doesn't mean that they never move forward, but now they have something firm and clear to look at and do some calculations and see if they can support it or not. Mr. Gillis stated that they went through this before. The cost of the solar array is like \$2b or something like that and then over the lifetime it make like \$10m of electricity. Over 40 years you end up \$7m in the plus, but the problem is you still need to come with \$2m to pay for it. Is that something you can do as a town; use the revenue that's coming in to pay the money that's going out or float a bond for \$2m? Mr. Bandazian stated that their standard proposal is the power purchase agreement. You buy your power from them at X cost. Mr. Gillis stated that you need less money if you do that. Mr. Bandazian stated that it gets done, and at six years you can buy it out if you choose to do that or you just keep chugging along. Mr. Gillis stated to keep in mind when looking over this. They do what's called a 2% adder. Power will cost more in 40 years than it does now and if you look at the way they've written it, they're saying that in 40 years it's going to cost 23 cents a kilowatt hour where it costs 20 cents a kilowatt hour now. Based on that, you make \$7m. He thought they would make a lot more than that, because the cost of power is going to go up a lot more than 23 cents. Mr. Bandazian stated that there's the collateral benefits of having 3-phase power available to the Public Works garage. Mr. Gillis stated that they showed that whole facility being behind the meter and just use the solar panels to compact the trash. That was about \$30k a year of electricity to run that thing constantly. Mr. Bandazian stated that with this proposal, the capacity is somewhere between 1.1 and 1.2 megawatts dc and the generating end they say 750 kilowatts on ac. Mr. Foote mentioned bringing 3-phase by Riddlebrook School and there was a discussion about the pros and cons of that. Mr. Gillis stated that they were going to be group metering, so they'll be sending power over the anyways. Mr. Foote stated that it's \$66k in poles and wanted to know how that gets you to \$1m. Mr. Bandazian stated that that's in addition to. Mr. Gillis thought that the \$1m didn't include the poles. Mr. Bandazian stated that the \$1m did include the poles. It's \$910k without including the poles. In full disclosure the \$910k isn't the whole thing.

Mr. Schneller wanted to know if this was at the Town Council level yet and Mr. Bandazian responded not even close. Councilor Radke didn't think it would make it in the budget. Councilor Thomas stated that they can't commit to unrealized future profits, so it would have to be bonded or something. As Town Councilors they can commit to the Town that they will have unrealized

income, but as a budget item they cannot commit. Mr. Gillis stated that the company that's going to build this finances the whole thing, so they just charge a monthly fee; it's paying off the \$2m. The Town would get the electricity and is guaranteed a certain amount of output. Mr. Bandazian stated that way is an option, but they would have to decide if that's the best option. This window is the time where the Town Council changes, they have a budgetary meeting, so it's not the most logical time to be having this conversation. The reason to do it now is they have a half million dollars, which they will not have in the future.

2. Town Pool PV Shade/Shelter – No discussion

c. Municipal Aggregation Cost Analysis and Presentation – No discussion

VIII. New Business

a. Discussion: Other possible solar projects in town – No discussion

b. Discussion: Charging Station updates – No discussion

IX. Reminders: Next upcoming meeting January 27, 2022

X. Adjournment

**MOTION by Mr. Elwood to adjourn by at 7:56 pm. Seconded by Councilor Thomas.
Vote taken – All in favor.**

Respectfully submitted by,

Dawn Boufford