



**CITY OF PORTSMOUTH NH
Portsmouth Energy Advisory Committee**

AGENDA

**Wednesday, November 6, 2024, 6:30 pm
City Hall Conference Room A
and via Zoom**

Members of the public may attend in person or via Zoom. To attend via Zoom, you must register in advance. Please click on the link below or copy and paste this into your web browser:

<https://us06web.zoom.us/meeting/register/tZYodO6tpj8uHt16-8JJ05HoBIaCuHFmy4Hi>

After registering, you will receive a confirmation email containing information about joining the meeting.

AGENDA

1. Roll call
2. Chairman's remarks
3. Approval of October 2, 2024 minutes
4. Exeter Planning and Sustainability Director David Sharples - Exeter's experience building a 1.77 MW solar project on town landfill <https://www.exeternh.gov/planning-sustainability/177-mw-landfill-solar-array-project>
5. Discussion and parallels to Jones Ave landfill site in Portsmouth
6. Old business
7. Public comment



CITY OF PORTSMOUTH NH
Portsmouth Energy Advisory Committee
Wednesday, October 2, 2024 at 6:30 pm

Meeting recording: <https://youtu.be/Qw5m0RuiVHY>

Attending: Councilor John Tabor, Kevin Charette, Herb Lloyd, Tom Rooney, Tracey Cameron, Peter Somssich, Ben D'Antonio. Staff: Jillian Harris, Stephanie Seacord (recording secretary) Not attending: Kevin Charette, Councilor Cook, Betsy Blaisdell.

Roll call – Chair Tabor called the meeting to order at 6:35 pm.

1. **Chairman's Remarks** – Revisiting the prioritized goals set by PEAC in February, progress has been made on solar education, supporting CPCNH and maximizing opt-up selections. Tonight's meeting looks at maximizing the energy efficiency of municipal buildings and starts the consideration of a community solar project. Would like to plan a work session on assessing the capped Jones Avenue landfill site for placement of a solar array. What brains need to be at that table?
2. **Approval of Minutes** – August minutes approved on a motion by Ben D'Antonio, seconded by Peter Somssich.
3. **Presentation and discussion by City energy consultants from EEI: Kerri Warms, Certified Energy Manager and Adam Jenness. Complete presentation: [Microsoft PowerPoint - Powerpoint Portsmouth Energy Advisory 9-30-24 \(cityofportsmouth.com\)](#)**

Based in Merrimack, New Hampshire, Energy Efficient Investments Inc. (EEI) was founded in 2007 and specializes in Performance Contracting in New Hampshire. Along with their parent company ENE Systems, Inc. EEI has over seventy years of experience in building control systems, security, automation and energy efficiency.

Kerri explained that their process is to conduct a portfolio benchmarking (with ISO interconnect) audit identifying the biggest needs and setting priorities, preparing engineering designs at investment grade, i.e. a full analysis with all the numbers – to maximize use of rebates, tax credits and Federal grant monies, and then constructing the project. EEI guarantees the performance and savings – both dollars and BTUs. The process produces a capital plan so that replacement can be anticipated not an emergency fix.

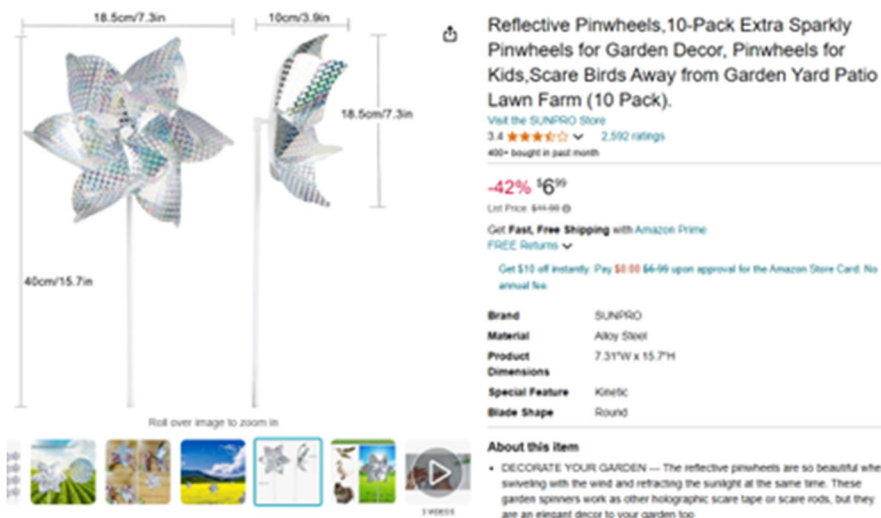
EEI has worked with the Portsmouth School Department conducting this process and implementing improvement projects at the Middle School, Little Harbor and New Franklin elementary schools.

Now working with City Facilities Manager Joe Almeida on 6 City facilities: City Hall, Portsmouth Police Station, all three Fire Department stations, Community Campus and the DPW complex on Peverly Hill Road. (Note: Peter Somssich asked if the Spinnaker Point Recreation Center, though not City-owned could be included as 6 years remain on the lease.)

There was a lengthy discussion about the challenges presented by the City Hall complex (EEI: Michael Davey, EEI Business Development Manager has commented that City Hall is “the most challenging building I’ve ever seen in my career because it was not designed for its current use.”) and consideration of ventilation options to find the balance with an appropriately-sized system: Variable Refrigerant Flow (VRF), existing 2-pipe with more ventilation, 4-pipe with more ventilation or geothermal.

EEI will present the results of the audit by Dec 2024 in order to consider projects for the FY26 CIP. Will supply the Auburn NH report as an example of the deliverable.

4. **Battery storage program** – item deferred to next meeting.
5. **NREL/wind power for sewer plants** – Herb Lloyd provided the quick update that the City has received a proposal from NREL detailing the scope of work: 60 hours of technical assessment of distributed wind power and battery storage for peak shaving at the City’s wastewater treatment facilities. Will also look at other options on City property – canopies, rooftops, etc. Report arrived too late for inclusion in the packet so Councilor Tabor will forward. This is a pilot project covering the financial viability, funding sources, cost and pro/con decision tree to dip our toe in the NREL pool. DPW Director Peter Rice is interested in their waste-to-energy and PFAS neutralizing program knowledge but City is not interested in being on the cutting edge of unproven technology.” Councilor Tabor has asked the City Manager about staff involvement to oversee NREL: City Engineer Erich Fiedler who was involved in early discussions and Ronnieann Rakoski, DPW regulator compliance admin. NREL will provide a written deliverable on their findings.
6. **Green Challenge report** – Portsmouth is leading in community opt-ups as of the August report.
7. **Green Challenge “yard sign” options** – Stephanie Seacord, PIO presented a weatherproof yard pinwheel. Tom suggested it could be branded with a label that folds around the stem with the “OptUp Portsmouth/CommunityPowerNH.gov/Portsmouth message. The pinwheels are 70 cents each compared to yard signs that are \$7 each. And the pinwheel is not plastic and supports the renewable wind message.



8. Old business

- Peter S. discussed the ability of solar 1.0 customers – those who installed systems before 2017 – who CAN sign up for Community Power and retain their net metering credits.** Mark Bollanger at CPCNH confirmed this but the customer service agents were not informed – and will be. Peter will advise when his switchover actually shows up in his Eversource bill so PEAC can inform the public, especially those at the solar education event who expressed interest.
- Peter S. has also investigated use of the Jones Ave. capped landfill.** He reviewed the City’s 2015 report on the site and called DOE who advised on the form and process (via a vendor) to allow. Peter Britz forwarded the necessary information for the form. Peter then discussed the idea with Beth McGwinn, DES site evaluation contact who explained the use for a solar array like the one in Jaffrey depends on the size and plan, noting the area is currently used for passive recreation. Peter suggested a site walk with Beth and PEAC. Councilor Tabor would like to investigate whether the energy generated could power the high school for behind-the-meter benefit. Herb has discussed the project with Katrin from Clean Energy NH. Need to define the goal. Many options: ReVision project paying City? Bonded City project with direct payoff? Partner with Clean Energy NH or CPCNH – involving other towns or not? Need to evaluate potential locations for the technological possibilities, review the financials and determine ‘is this achievable?’ Councilor Tabor will schedule a work session(s) to consider angles: invite Katrin/Clean Energy to facilitate a session with PEAC, a solar developer such as ReVision, Peter Britz and other City stakeholders.
- Tracey reminds PEAC about the NH Saves “Button Up” Workshop October 23 at Community Campus** – Coordinated with the Library and Sustainability Committee. Outreach in the form of flyers, press release and City Newsletter all forthcoming.

9. Public comment – no public attending and no Zoom participation due to a scheduling error.

10. Adjourned at 8:30 pm

Next PEAC meeting: Wednesday, November 6 at 6:30 pm

DRAFT



**Sagamore Creek Master Plan
Final Report
Mayor's Blue Ribbon Committee
on
Sagamore Creek Land**



Councilor Eric Spear, Chair and Council Representative
Councilor Chris Dwyer, Council Representative
John Mikolajczyk, Resident Representative
Alison Pyott, Resident Representative
Lennie Mullaney, School Board Representative
Kory Sirmaian, Recreation Board Representative
Allison Tanner, Conservation Commission Representative
David Moore, City Manager's Designee, Ex-officio

November 18, 2015

INTRODUCTION

In February 2015, the Mayor appointed the Blue Ribbon Committee on the Sagamore Creek Land. Since that time, the Committee has worked to make progress on its charge: to create a plan for public usage of the city-owned land at Sagamore Creek. The Committee includes representatives from the community, the Recreation Board, Conservation Commission, and School Board. The process and steps taken by the Committee are summarized in this report as is the Committee's vision, Master Plan of proposed improvements, key considerations in developing this report back, and recommendations for the management of the site. The Master Plan and recommendations in this report do not represent a large increase in usage or traffic to the site. Many of the uses discussed in this report are currently taking place on the parcel.



Vision

In June 2015, the Committee recommended, and the City Council adopted, a vision and guidelines for the use of the Sagamore Creek Land. The following is the vision for public use of the land:

The Sagamore Creek Land is a unique and valuable community resource that should be conserved and made accessible to all in a balanced manner that promotes waterfront access, protection of invaluable natural features, and permits recreation opportunities that complement one another and which are sensitive to the overall vision of preserving the site's character.

The full Vision and Guidelines can be found in ***Appendix A, Vision & Guidelines***.

Committee Process and Public Input Opportunities

The Committee completed extensive research and outreach to the community throughout its 11 meetings since February 2015. The Committee worked to review and discuss the site's past usage and history; its environmental characteristics and natural resource values; its past use as a landfill; previous plans and studies associated with the parcel; and options for landfill reuses.

In addition to comprehensive public input from the residents of Portsmouth (summarized below), the Committee's work benefited from significant study and work of other City's boards and staff as well as in depth consultations with experts in various fields. In addition to having member representatives from the School Board, Recreation Board, and Conservation Committee, the Committee met with various professionals and users to obtain their input on this plan. A summary of these efforts is described below.



1. The Committee was presented with extensive background and history of the parcel by and details about environmental characteristics and natural resource values by City staff. In particular the Committee reviewed:
 - 2010 Recreation Needs Study – Recreation Board
 - 2010 Public Undeveloped Lands Assessment – Conservation Commission
 - 2007 Sagamore Creek Land Vernal Pool Study - Conservation Commission
 - 2007 Jones Avenue Landfill Status Update – Hoyle, Tanner & Associates
 - 1999 Master Plan for Peirce Island – Community Department
2. The Committee met with engineers who have worked on the Landfill closure at Jones Avenue as well as an engineer who has worked on various reuse projects for landfills, including in New Hampshire.
3. The Committee hosted a large meeting and invited each of the four boards and Commissions who interact with the Sagamore Creek property. Representatives of the City's School Board, Recreation Board, Conservation Commission and Sustainability Committee attended to discuss the current uses of the site and to provide their perspective of each on the future uses of the parcel. Representatives from High School Cross Country Program, Environmental Club, and Science Department attended as well as many other conservation, environmental, recreation, and sustainability advocates.
4. On May 7, 2015, the Committee held a public input session on a draft vision and guidelines for a plan for public use of the city-owned property. Nearly 20 people made public comments on the draft document at the meeting. Another 25 people submitted comments electronically (see below).

5. In June, the Committee submitted an interim report, which included a Vision and Guidelines document, to the City Council for adoption prior to moving forward with plan development. The document was adopted by the City Council unanimously and it has guided the Committee through to the submittal of this final report.
6. A sitewalk and meeting with Portsmouth Department of Public Work's Water Resources Manager, Transportation Planner, and Environmental Planner/Sustainability Coordinator was held.
7. City staff consulted with the Cross Country program at Portsmouth High School to discuss the proposed improvements included in this report. Northeast Passage (NEP) an advocacy organization for universal access programs (a program of the University of New Hampshire) will be a resource during the implementation stage.
8. The Committee City met several times to discuss a final plan for the site and its report back. It held a public input meeting in November on the draft plan and report.

Summary of Public Outreach Strategies

1. Committee website. A dedicated website for the Committee's work has assisted in communicating about the work of the Committee. At that web site, interested members of the Community accessed presentations and documents reviewed by the Committee as well as links to each of the Committee's minutes and meeting notices. Materials reviewed by the Committee as well as a link to agendas and meeting minutes can be viewed at <http://www.cityofportsmouth.com/sagamorecreek.html>.
2. Public Comment Form and Submitted Letters. A public comment form was made available via the Committee's webpage and a total of 25 comments was received for the Vision and Guidelines document in May and several more received for a November public input meeting on the draft version of this plan. Each comment is published on the Committee's webpage as are copies of letters submitted to the Committee.
3. Public Comments within Meetings. Each meeting's agenda has included a public comment section, which has been extensively utilized by the public. Each comment delivered during the meetings has been recorded in each set of meeting minutes accessed via the City's meeting's calendar on the website. A list of meeting dates is located at the webpage for the Committee.

KEY CONSIDERATIONS IN DEVELOPING THE SAGAMORE CREEK PLAN

Coordination with the Department of Environmental Services

The Sagamore Creek parcel is the site of a closed landfill with an active groundwater management permit (GMP) that is administered by the State of New Hampshire Division of Environmental Services (NHDES) through a post-closure monitoring plan. Groundwater and surface water quality testing is conducted semi-annually in accordance with the GMP and reports are submitted annually to the NHDES. Any changes to the landfill that are not consistent with the post-closure plan including modifications to uses, cap access, security fencing and proposed development of the cap itself must be coordinated with and approved by NHDES through a post-closure use modification. City staff consulted with NH DES staff as part of the Committee work and the Committee met with an engineer familiar with the cap's construction and another engineer with extensive landfill reuse efforts in New Hampshire. The Committee also reviewed two reuses of landfill sites in New Hampshire that included significant and extensive reuses, including structures and parking lots, etc. The level of anticipated improvements envisioned in this plan is significantly less extensive than previous larger scale redevelopments on other closed landfills in New Hampshire. In consultation with NHDES on this subject, the envisioned improvements described in this plan are consistent with requests that the NHDES has authorized at other closed landfills. Additional investigations of the landfill cap integrity and gas production may be needed as part of the use modification request.

Stewardship and Promotion of City Passive Recreation Assets

The Vision and Guidelines developed by the Committee specifically address the desire to avoid overuse of the Sagamore Creek parcel in ways that may negatively impact the neighborhood, environmental qualities or natural setting. The Committee discussed how one way to manage overuse of the parcel by any one use is to maintain and promote the network and series of recreational opportunities that permit various uses. Sagamore Creek Parcel is a passive recreational asset, which will be added to the current inventory of similar resources:

- the Creek Farm trails at Little Harbor Road (owned by NH Society for Protection of Forests);
- City trail system at Little Harbor Road and linked with the Creek Farm;
- Peirce Island trail systems and recreation areas; and
- Great Bog with its trails.

Other recreational assets, such as the creation of a new Hampton Branch Rail Trail and ongoing efforts by the Conservation Commission to create additional trails and public access points will ensure that many opportunities for passive recreation will exist, thereby helping to manage the

overuse of any one asset. As these recreational opportunities expand and the trends toward passive unorganized recreational opportunities continue, the Committee recommends a more formal strategy for managing the parcels, promoting their availability, and encouraging stewardship through volunteerism.

Recreation Fields

The Committee deliberated at length on the many proposals for the parcel's use that were brought forward by Committee members, members of the public, as well as representatives from other City Boards and Commissions. In its Interim Report in June, the Committee addressed the specific city-wide need for recreation fields. In that Interim report, the Committee did not recommend moving forward with recreation fields for organized sports at the Sagamore parcel; however it did make specific recommendations to the City Council in pursuing next steps for making progress on alleviating the field shortage. At the Committee's recommendation, the City Council requested the City Manager report on ways to both maximize usage of existing City assets as well as research the potential for acquiring new land for recreation fields. A Phase I report on the use of existing City assets was provided to the City Council in August. That report prioritized opportunities for resurfacing fields, making upgrades to existing undersized fields, and moving forward with the development of the former Stump Dump on Greenland Road. A phase 2 report back on the acquisition of land for further adding to the inventory is planned in coming months. The phase I report can be found on the City's website at <http://www.cityofportsmouth.com/recreation/ReportBack-August3,2015-PhaseIRecreationFields.pdf>.

MASTER PLAN: DESCRIPTION AND EXPLANATION OF RECOMMENDED IMPROVEMENTS

This final report applies the Vision and Guidelines to a Master Plan, which is part of this final report (**Appendix B, Master Plan**). In addition, the report also includes this summary and recommends the adoption of management recommendations, which are intended to be used in support of the plan as the implementation moves forward.

This plan was developed with an eye toward balancing competing interests of various stakeholders; these include abutting property owners and residents of the Jones Avenue area; current user groups and individuals who make use of the site presently; residents who would utilize the site more if it was signed as publicly-owned and accessible; people of all abilities who seek passive recreation areas within Portsmouth; and others.

In follow-up to the adoption of the Vision and Guidelines, the Committee identified improvements needed in order to realize the vision in a Master Plan. In keeping with the Vision above as well as public comments throughout its process, the Committee sought to achieve a balance of encouraging use without overdevelopment of the site or impeding on the natural setting. The site is home to an extensive and widely used trail system that is recommended to remain in place. The existing trail system is outlined in a thin green line in this image of the Master Plan below (figure 1). The Master Plan is reprinted in a larger format in **Appendix B**.



Figure 1 This Master Plan is printed in a larger format in Appendix B. The thin green trail lines are existing, well-used trails. The trails on the cap (thicker green lines) - in the center of the parcel - are a proposed trail expansion to promote waterfront viewing, enhanced access to the cap.

This Master Plan is intended to show the type and location of the recommended improvements. Final designs, materials, and locations of elements will be finalized as part of the implementation phase(s) and the engineering and design work completed prior to each improvement. These improvements include the following:

1. **Signage.** Perhaps one of the most common observations heard by the Committee has been the need to make sure this valuable public asset is signed in a manner that invites use by the public. One resident reported not knowing the resource was available during the entire tenure of her residency in the Jones Avenue neighborhood. As a result, the Committee has recommended creating a more welcoming frontage by removing the locked fence at the entrance at Jones Avenue and adding signage, which identifies the parcel as being publicly-owned and welcoming to visitation by the public.



Figure 2 This signage from Peirce Island is in keeping with the style of signage recommended for the site.



Figure 3 A kiosk like this one may be appropriate to orient visitors and provide information.

2. **Improve Existing Pedestrian Linkages.** In keeping with the stated goals of the City’s Master Plan and Bike and Pedestrian Plan, the Committee has recommended maximizing the connections this parcel already has to adjacent parcels and uses including residential areas along the Route 1 corridor, the Jones Avenue neighborhood, the High School, and Sagamore Creek. In one location, this will require the construction of a boardwalk to cross a tidal creek between the Sagamore Creek Land and Winchester Place apartments.



Figure 4 The City's Bike-Ped Plan shows the Sagamore Creek Parcel in relationship to the Urban Forestry Center and other bike and pedestrian connections.



Figure 5



Figure 6

Figures 5 and 6 show an example of a boardwalk feature over a wet area or depression that is recommended to better link an abutting property to the site.

3. **Creation of On-site Parking.** The Committee is recommending an on-site parking area be created in order to ensure residents of all abilities are able to access both the wooded and open portions of the site. Presently, only haphazard and informal parking is available for users at the site outside of the fence at Jones Avenue; it is not accessible and can accommodate few vehicles.

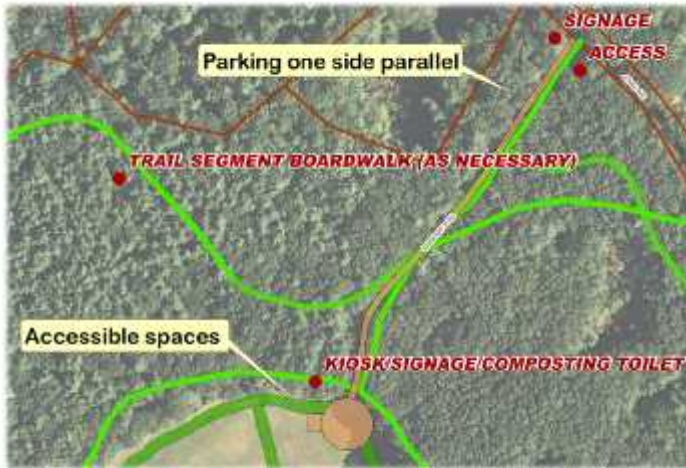


Figure 7 This detail from the Master Plan in the Appendix shows how the parking will be along the existing roadway into the site, with a turnaround (circle) near the cap. This provides non-intrusive parking and access to the cap for people of all abilities.



Figure 8 This picture shows the current condition outside the locked gate at Jones Avenue. Not many cars can be accommodated; the parking is unorganized, and potentially unsafe.

After much deliberation and input, the Committee is recommending a configuration for providing parking, which will have the smallest environmental and aesthetic impact on the site. This recommended improvement utilizes the existing roadway into the site, provides parallel parking on one side (to accommodate approximately 30 vehicles), and creates a turnaround at its terminus along with accessible spaces. Alternative options for creating parking for vehicles would require widening the existing roadway into the site thereby impacting wetlands and requiring tree removal. The recommended scenario utilizes the existing roadway and creates a turnaround area at the current opening at the end of the roadway at the cap. As part of this recommendation, the Committee is recommending no additional impermeable pavements be utilized and, where possible, reduce the existing paved area to benefit both the adjacent wetlands (including vernal pools) as well as promote the natural undeveloped nature of the site.

4. **Promote Access to the Landfill Cap Open Space.**

A major underutilized portion of the parcel is the landfill cap, which lies elevated in the middle of the parcel at the edge of Sagamore Creek. This green space may be the only undeveloped and unprogrammed open field space of its size owned by the City. This open field space with no trees is ideal for walking and waterfront viewing, bird watching, kite flying, cross-country skiing, picnicking and other unorganized passive activities enjoyed by a wide cross-section of our community of all abilities. Recommended improvements are intended to maximize the flexibility and availability of this open space for the many possible activities and promoting use by people of all abilities while maintaining the high value of this meadow-like area as nesting habitat for many bird species. With these uses and values in mind the Committee is recommending the following improvements to the cap:



Figure 9 This detail from the master plan shows an accessible trail system and mowed areas around the landfill cap's border.

- a. Create an accessible trail system from the parking area to a waterfront overlook. This area would be made accessible by a paved path and mowed edges. The Public Works Department current mows the capped area twice a year. With this improvement, additional mowing would be needed around the trail system.
- b. Increase public access to the cap by reducing the linear feet of fencing along its perimeter. A chain link fence surrounds the open field space of the cap; removal of significant portions of this fence would promote public use and reduce structures in this area. Fencing will need to remain in areas where there are steep grades (such as that portion along the waterfront) and in certain areas of the cap system. Where fencing is required to remain, some alternative to chain link fencing might be introduced which better complements the property.

5. **Waterfront Access & Viewing.** Creating waterfront viewing opportunities to improve access to the waterfront is a major priority and recommendation in this final report. This recommendation includes the potential future inclusion of a canoe-kayak dock facility for use by non-motorized watercraft. This canoe-kayak dock is not a high priority due to the tidal nature of Sagamore Creek and the inaccessibility of the access point during significant portions of the tidal creek. This feature is designed to be accessible via the water as opposed to promoting the portage of canoes and kayaks from the parking area.



Figure 10 This detail from the Master Plan in Appendix A, shows recommended locations of waterfront features to ensure public access to the waterfront.



Figure 11 These two examples of waterfront structures are envisioned to provide meaningful public access to the waterfront at the parcel's shoreline along Sagamore Creek

6. **Interpretative Signage.** The Sagamore Creek parcel has the potential to be an opportunity to encourage conservation, promote sustainability, encourage scientific discovery (through existing School programs), and educate residents about the City's past strategies for managing solid waste through this landfill site.



Figure 12 This is an example of interpretative signage in a wooded area.

Some examples of interpretative marker content might include:

- the presence of Native Americans in Portsmouth;
- Landfill Practices of the 19th and 20th Centuries
- Vernal Pool Habitats
- Invasive Species Management
- Gulf of Maine Tidal Marsh
- Sagamore Creek Estuary

7. **Toilet Facilities.** Like many other recreational spaces in the City, the Sagamore Creek parcel is recommended to have a toilet facility. The Committee believes it would be appropriate to have a composting toilet on site, which could also serve as a potential educational opportunity.

Figure 13 A compostable toilet facility at the site is envisioned to both provide a needed service at a recreational area of this type and may also be an educational opportunity. This one is located at Cathedral Ledge State Park in New Hampshire.



8. **Improvement to Existing Trails.** The Sagamore Creek Land already has a series of well-developed, maintained, and used trails. In addition to use by the Cross-Country program at Portsmouth High School for both competition and practice, the trails are used by the general public. While no trail expansion is recommended as part of this plan, the Master Plan does note the need to continue to care for the trails in a manner that encourages users to stay on the trails avoiding sensitive wetland or vernal pool areas and minimizing impact to existing understory vegetation. This might include improving drainage in certain areas or boardwalking trail sections in particular need of protection. Consultations with the Cross-Country program confirmed that no proposal in the Master Plan presents conflicts with the program.

IMPLEMENTATION OF THE MASTER PLAN

According to the City Charter, the City Manager is responsible for managing City-owned property and day-to-day operations of the City government. This plan and report is designed to layout the community's vision and desired improvements for the parcel. The overall vision for the parcel will not be achieved in a year or even two years, but over a longer time horizon. We hope that, by defining the big picture, the City Manager and City staff, with support of the City Council will find ways to sequence these improvements that make sense and that best leverage investment of local tax dollars with other sources of funding. The following are potential strategies and opportunities for carrying out these improvements.

1. **Regular funding through the Capital Improvement Program (CIP).** Identification of specific elements of this master plan should be completed through the City's CIP plan. Regular and predictable levels of investment will help staff plan projects in the future.
2. **Conservation Fund.** The City's conservation fund has been identified as a resource in the Capital Improvement Plan for implementation of this plan. As many of the improvements envisioned include conservation-related strategies and measures, additional use of this resource may be appropriate.
3. **Use of Volunteers.** Each year, many businesses, civic groups, and individuals work with the various departments including the Department of Public Works to carry out useful projects throughout the City. Many items in the Master Plan can be carried out in coordination with these groups, including invasive species management, trail maintenance and improvements, and general clean-ups and other maintenance activities.
4. **Coordination with Boards and Commissions.** The Sagamore Creek Land is valued and used by many people in our community. Likewise, several City Boards and commissions are stakeholders when it comes to the various uses of the parcel, these include the Conservation Commission (planning for stewardship of undeveloped public lands, valuable wetlands and management of invasive species); Recreation Board (recreation programs); Sustainability Committee (natural resource protection and learning environment); and School Board (educational programs and cross country program).
5. **Grants and Donations.** Wherever possible opportunities to further leverage local tax dollars and volunteer hours should be used in furthering progress on the Master Plan.

MANAGEMENT RECOMMENDATIONS

In addition to making progress on the planned improvements, the Committee discussed many management policies related to the enhanced public use of the property. The Committee understands that management of these facilities is the responsibility of the City Manager and the City Council. The Committee's guidance for management practices at the site are below and based on the Committee's deliberations, conversations and input from the Community and abutters. In general, making this unique City asset more visible and usable by residents will require maintenance and monitoring like any other public facility. The Committee has sought ways to minimize the impacts of making this site more usable by the public, however, in general, the value of increasing access and recreation opportunities outweighs the overall impacts of increased maintenance and monitoring needs.

- Carry in, carry out policy – No definitive recommendation is made relative to carry-in, carry-out. In general, the overall master plan is intended to preserve the natural feel of the area; the introduction of more trash and recycling receptacles and additional labor needed to manage them, are in contrast with the overall vision. It is recommended that a carry-in, carry-out policy be piloted in order to encourage continued careful stewardship of the site by the public and to minimize impact on City resources.
- Park Hours and Night Time access – The Committee's vision to make this site accessible includes access by the public at night. Night-time cross-country skiing, star gazing, and night-time walks are already enjoyed by members of the public at this location and many other parks throughout the City.
- Grass-cutting schedule – The landfill cap is currently fenced off from public use and the meadow area is cut twice per year. In coordination with the Public Works Department the committee discussed the impact of making the meadows more accessible to the public. Current mowing of the site is done in coordination with the nesting habits of certain birds at the site. This practice should continue. Additional mowed areas such as along the perimeter and through the middle of cap, are intended to provide enhanced access to the cap for multiple passive uses (including paved accessible paths) without over imposing on the meadow habitat vegetation.
- Maintenance of roadway and parking areas – The roadway and parking areas are improvements that should pose minimal development impacts and be in line with the existing level of development. For example, no roadway de-icing or salting strategies would be used in this sensitive area; however the site would be plowed to encourage year-round use.
- Current on-leash area – The City's existing ordinance is in effect at the site. The site is not currently designated an off-leash area and dogs are to be on-leash. At this time,

while no proposal to change this has come forward, consideration of any change should weigh heavily the risk to sensitive habitats including wetlands and vernal pools and sensitive flora present at the Sagamore Creek land.

- Managing Invasive species – The City Departments should continue to work closely with the Conservation Commission and volunteer initiatives to manage invasive species at this site. Much work has been done to identify invasive species and there is much interest in the community in growing the numbers of volunteer stewards and groups who may wish to further assist and develop this effort; coordination and assistance with these groups should be an administrative priority in managing this site.
- All signage and park rules should reflect existing City ordinances.
- In general, future decisions regarding the facility should refer to the Vision and Guidelines document included in this report for guidance. In particular, given the vision of protecting the site and preserving its character as a natural area, the **Conservation Commission** is well-positioned to provide guidance on moving forward specific elements of Master Plan implementation such as final location of trail boardwalks and overlooks to minimize environmental disruption, coordinating volunteer groups to work on removing invasive species, and protecting endangered plant species, and maintenance practices sensitive to nesting birds, etc.

Appendix A

Vision & Guidelines

Blue Ribbon Committee on the Sagamore Creek Land

Interim Report: Vision and Guidelines

Vision:

The Sagamore Creek Land is a unique and valuable community resource that should be conserved and made accessible to all in a balanced manner that promotes waterfront access, protection of invaluable natural features, and permits recreation opportunities that complement one another and which are sensitive to the overall vision of preserving the site’s character.

Proposes Uses and Activity From the Community	Does the proposed use/activity fit within the Vision described above	Explanation of the Committee’s determination
1. Outdoor Classroom and educational purposes; including interpretation of historical, cultural and environmental resources	Yes	Many of the uses provided by the School Department representatives (at left) are currently taking place at the site. Given that the land is adjacent to the high school, the Committee determined that educational uses should continue and the parcel should continue to be used in ways that provide experiential enrichment.
2. Cross Country Trail System	Yes	This long established use has benefited not only the Athletic program at the Portsmouth High School, but doubles as a trail network for the general public, which has the added benefit of directing foot traffic away from ecologically sensitive areas.
3. Middle School Mountain Biking Program	Yes	The existing use has complemented the Cross Country and general public use and the current level of activity is in keeping with the vision described above.
4. Mountain Biking (General Public)	Yes	The Committee found that promotion of general mountain biking is consistent with the vision described above.

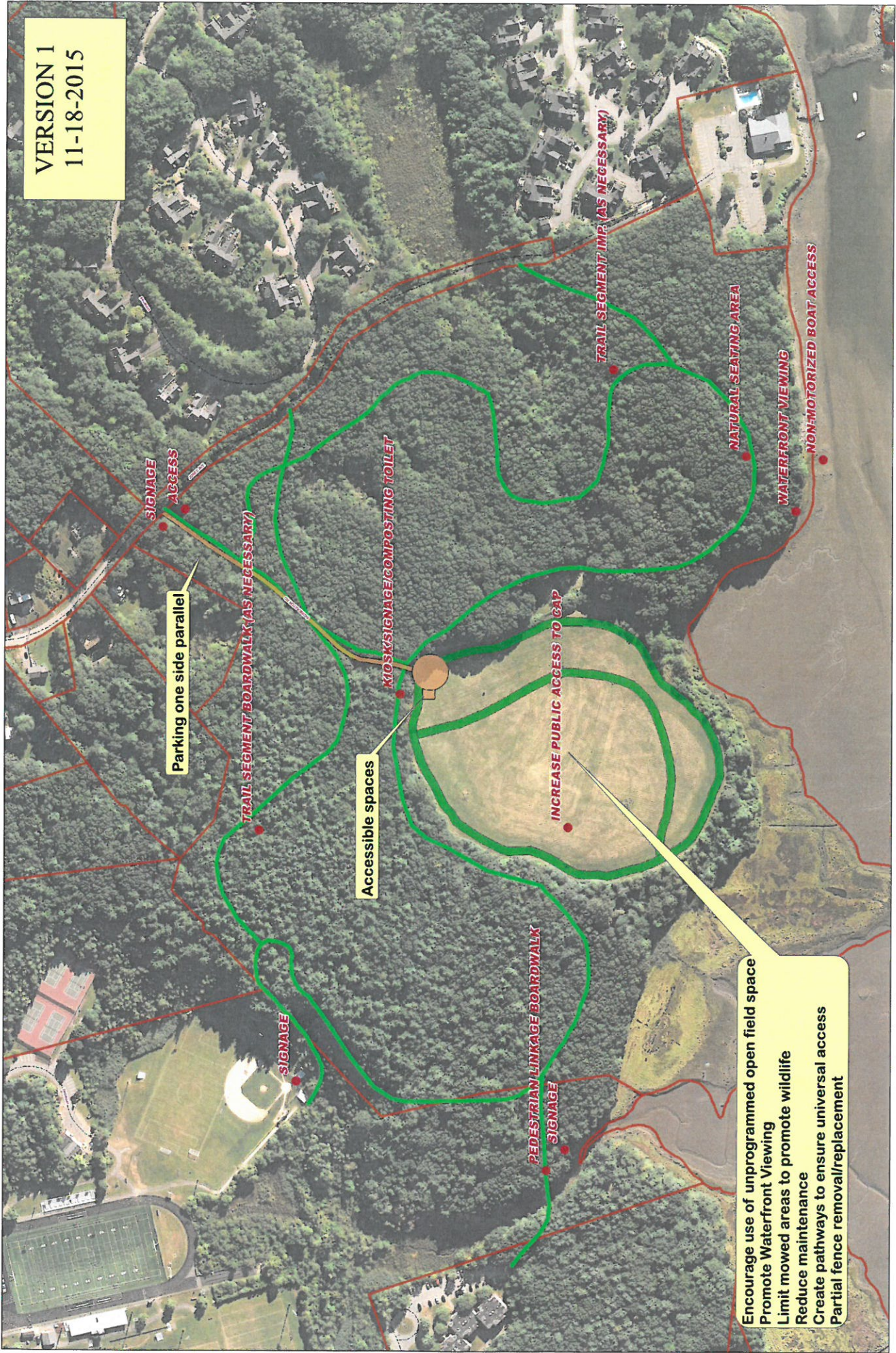
5. Community Garden	No	The implementation of a Community Garden facility and use has many challenges at this particular site including (access and water amenities). However, the Committee is supportive of this use if sponsored as an educational program adopted and managed through the School system.
6. Recreation Fields for organized team sports	No	The Committee explored at length the planning documents and input from the Recreation Board regarding the need for multi-purpose recreation fields for organized field sports in Portsmouth and agrees adding fields and capacity to meet demonstrated needs should be a high priority for the City Council. There are three reasons the Committee has found these uses inconsistent with the vision above. 1. There are many significant physical constraints that would limit the recreational value of the end product and consume large amounts of capital resources that could be better used in meeting the field needs in alternative locations. 2. Extensive alteration of the landscape to make the fields usable (grading changes, retaining walls, and extensive tree removal) that would negatively impact the natural resources present. 3. Development of access ways, field lighting, restrooms, and related amenities would negatively impact the character of the parcel.
7. Passive Recreation and Informal Recreation Uses (i.e., kite flying, sledding, bird watching, cross country skiing, Frisbee, picnicking) on the landfill cap.	Yes	Many of these activities take place at the site currently. They are consistent with the vision above.
8. Water Access for non-motorized water craft with defined entry	Yes	A major ongoing priority of the City as expressed in its planned documents and elsewhere is waterfront access. This parcel's unique and long frontage along Sagamore Creek is not only an invaluable vista for public enjoyment but holds the possibility of another low –impact access point for non-motorized watercraft.

9. Solar panel array	No	The Committee determined that solar panels in this location would preclude the use of the site for a number of other attractive uses benefitting the public. It also noted the solar panels can be placed in many settings such as roofs and on top of parking structures, which are preferable to preventing other uses for valuable waterfront and open space lands.
10. Access Improvements for pedestrians, vehicles, and bicycles; including universal access for people of all abilities. This item includes promoting linkages to other nearby passive recreation areas	Yes	Formalizing access to and providing signage at the site will ensure the public is welcomed and can safely access the Sagamore Creek Land. Access to the site is consistent with the vision above in that it can encourage access in ways that are sensitive to the natural resource values.
11. Disc Golf	No	The Committee discussed the potential for siting a disc golf course at the parcel. The Committee noted the installation of single-purpose structures as well as the risk to off trail activities that could threaten natural resources present. It was noted that some publicly-owned undeveloped lands (identified in the PULA study) likely represent appropriate opportunities for this use.
12. Dogs	Yes	The Committee discussed how the presence of dogs at the site were appropriate and welcome provided they be on leash. This is important for ensuring the protection of endangered plant species and ensuring trail boundaries are respected. In addition, the Committee noted the existence of a number of other sanctioned off-leash areas within the City, which can accommodate this use.

Appendix B

Master Plan

VERSION 1
11-18-2015

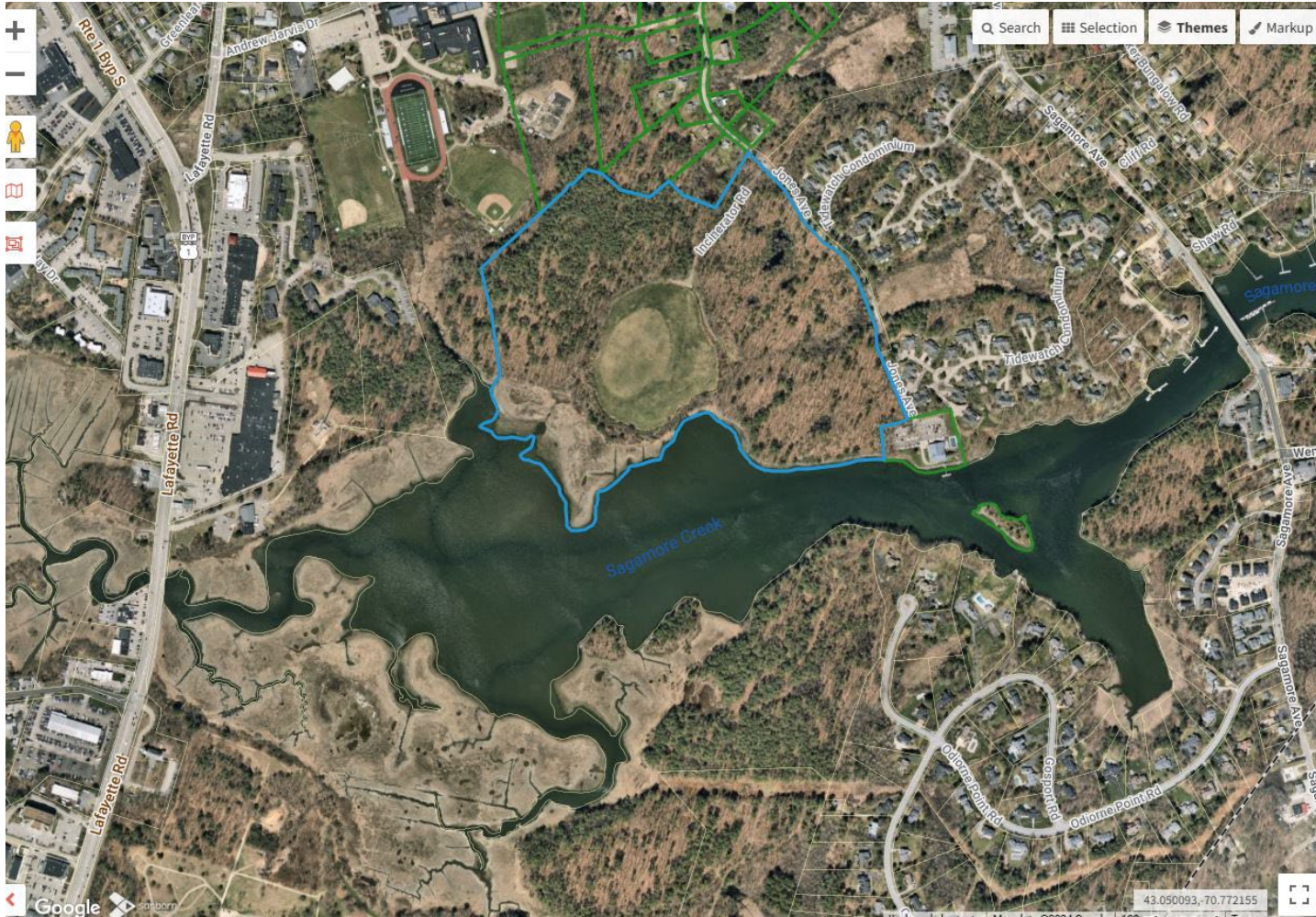


Parking one side parallel

Accessible spaces

- Encourage use of unprogrammed open field space
- Promote Waterfront Viewing
- Limit mowed areas to promote wildlife
- Reduce maintenance
- Create pathways to ensure universal access
- Partial fence removal/replacement

Jones Avenue Landfill



- Former trash incinerator site in 1960s
- Capped landfill
- ~ 9 acres
- Possibly the largest possible solar site in the city

Solar array would require a change in policy



- 2015 Blue Ribbon Committee examined uses for Sagamore headlands
- Recommended against solar panels in favor of passive recreation/trails
- Committee envisioned trails on the grassy top of the landfill
- DES subsequently closed off public access
- Could both uses co-exist?
- Could require upgrades
- <https://files.cityofportsmouth.com/sagamorecreek/FinalReport-SagamoreCreekLand11-18-2015.pdf>



TOWN OF EXETER

Planning and Building Department

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www.exeternh.gov

Date: January 13, 2023
To: Russell Dean, Town Manager
From: Dave Sharples, Town Planner
Re: Solar Array at Cross Rd Landfill

Executive Summary

I am writing this memorandum as I have completed my research and review of a potential solar array at the Cross Road Landfill. I will provide a brief overview of how we got to where we are today. I also provide a comparison of ReVision's pro forma and the pro forma developed by Competitive Energy Services (CES), who the town contracted as a third-party review, and end the memo with a project summary. I believe the project is worthy of consideration by the Select Board to decide if it should be placed on the 2023 Town Warrant as both ReVision and the CES pro formas show a cash positive project at the end of the 25-year warranty period.

How we got here

I explored the potential of a solar array at the Cross Road Landfill for many years that resulted in a warrant article being proposed in March 2021 to construct a solar array at the landfill for a total cost of \$3,617,629. However, at that time we had not completed an interconnection study to determine the feasibility and potential cost of interconnection to the site. The reason being is that I was hopeful that this cost would initially be borne by a private firm.

After a successful vote, the Town entered into a contract with ReVision Energy who funded the interconnection study at their expense. By the time the interconnection study was completed, the cost of interconnection far exceeded what ReVision initially estimated. Moreover, the economy experienced rapid inflation and the cost of the solar array increased dramatically. This had a chilling effect on the prospects of constructing the system. However, I continued to pursue a variety of options to determine if there was a feasible path forward. As it became increasingly unlikely that the Town could make the numbers work given the realities of inflation and rising interest rates, the US Government passed the Inflation Reduction Act (IRA) in August 2022. The Investment Tax Credit (ITC) has made the project viable again as will be further described below.

The IRA included a provision that allowed municipalities to potentially receive a 30% Investment Tax Credit for renewable energy projects. We believe that the proposed system at the landfill qualifies for this credit. There is a 15% "haircut" of the credit since we would utilize tax exempt bonding to finance the project and this is reflected in the pro formas I will describe below. Please note that ReVision's calculates the ITC at 15% of the total and not

15% of the 30% credit. In other words, the ReVision pro forma underestimates the amount of credit the system is eligible for. I will explain why this is at the meeting.

In addition to the 30% ITC described above, there are two additional credits that are potentially available for this project. The IRA allows an additional 10% ITC for brownfields. However, the rules have not been published so it is unclear if Exeter could take advantage of this credit and this is NOT reflected in the attached pro formas. Lastly, there is another 10% ITC if you source some of the materials from US manufacturers. However, with supply chain issues and the limited availability of the materials, it is unlikely that we could take advantage of this credit and it is NOT reflected in the pro formas.

Last week I received the latest pro forma and summary of the project from ReVision Energy that represents their estimate of project costs in today's market. I provided this pro forma to Competitive Energy Services (CES) for their review and to develop their own pro forma for comparison purposes. I have attached both these pro formas along with the project summary for ReVision and a memorandum from CES dated October 3, 2022. It is important to note that the October memo from CES was in response to a pro forma submitted by ReVision in October that is different from ReVision's current pro forma due to continued due diligence on the part of ReVision to further refine the costs associated with the project. However, I have enclosed the memo as it still provides great insight that equally pertains to the current pro forma and other important information about the project.

Pro Forma Comparison

I have enclosed both the pro forma from ReVision and the pro forma from CES. You will note that the year to year cash flow projections vary considerably between the two and this is mainly due to the estimated credit value of the energy produced by the system.

Here are the main highlights from my comparison.

- Both pro formas agree on the system's kilowatt hour (kWh) generation throughout the life of the system.
- The pro formas differ significantly regarding the estimated future value of the net metering credit value. Further discussed below.
- Both pro formas agree on the future price of Renewable Energy Credits (REC's) sale value. It is important to note that while CES carries the same number in their pro forma, they do state in their memo that "ReVision's assumption of REC market value is very conservative".
- ReVision's pro forma shows the project being cash flow positive from day 1 to the end of the useful life of the project.
- The CES pro forma shows the project being cash flow positive from year 1 through year 11 before going into the red between years 12-20.
- Both pro formas show the project as cash positive at the end of the 25-year warranty period of the system. ReVision estimates a cumulative savings of \$4,852,768 at the end of the 25-year warranty period. CES estimates a cumulative savings of \$562,419 at the end of the 25-year warranty period. The significant spread between these two estimates is discussed below.

The significant difference between the two pro formas is mainly due to the assumption of what the value of the net metering credit will be in the future. The net metering credit is tied

directly to the cost of electricity. ReVision assumes a net metering credit value of about 17 cents per kWh in year 1 and then applies a 2.5% escalator to every year based on historical trends of energy pricing. CES assumes a net metering credit of about 12 cents in year 1 but then predicts the value of the credit to sharply decrease years 2 and 3 before slowly starting to rebound. Their assumption is that the value of the net metering credit in year 1 will go down and not return back up to year 1 pricing for 35 years or 2058. This is illustrated on the chart in the CES memo on Page 7.

Summary

I have provided all of the information above in hopes of providing adequate information to allow the Select Board to make an informed decision on putting forth a warrant article to the voters to construct the solar array at the Cross Road Landfill. I believe the town has done its due diligence and has received advice from an independent third party. It is important to note that both of the ReVision and CES pro formas are based on assumptions of what will happen in the future.

If a warrant article should go forward, it would need to include the amount of \$1,606,645 that represents the difference between ReVision's estimate provided before the 2021 warrant and ReVision's recent estimate received last week. It is important to note that we are close enough to the vote that ReVision has verbally assured me that their proposed pricing will be valid after the vote. This wasn't the case last time and we are now much further along with the interconnection study completed and proposed pricing that will be honored should the voters approve the article.

Beyond the data, facts, and potential monetary impacts of the system provided above, there are other considerations that could go into the decision process. While the financials are extremely important to any project, there are multiple benefits associated with developing local renewable energy projects. New Hampshire's cost for electricity is currently heavily dependent upon the price of natural gas. Natural gas is a global commodity and events that are worlds away from Exeter NH will and do have an impact on what Exeter residents pay for electricity. Building a more resilient and local source of energy and reducing our dependence on fossil fuels can lead to a more secure and sustainable future. In the short term, these projects can bring jobs and revenues into the local economy. In the long term, renewable energy projects can reduce our reliance on fossil fuels, a finite resource that is subject to pricing pressures on a global scale.

Thank You.

enc (4)

EXETER NH SOLAR PROJECT



Purchase Price	\$5,227,274
Solar Nameplate kWdc	1,769
ITC Credit Amount	30%
ITC Discount	15%
Installed System Cost	\$4,889,274
Interconnection Cost	\$338,000
Loan Interest Rate	3.65%
Town Sells RECs	Yes
NPV Discount Rate	5%
ITC Earnings (per year)	1.0%

Year	Year	Generation kWh	Net Metering Credit Value \$/kWh	Net Metering Credit Value \$	REC Sale Value \$/kWh	REC Sale Value \$	ITC Value Received \$	Total Savings \$	Year	Principal \$	Interest \$	O&M Cost \$	Total Cost \$	Year	Net Savings \$	Cumulative \$
2024	1	2,314,393	\$0.1239	\$286,641	\$0.035	\$81,004	\$1,332,955	\$1,700,600	1	(\$182,011)	(\$190,796)	(\$6,601)	(\$379,407)	1	\$1,321,192	\$1,321,192
2025	2	2,302,821	\$0.1113	\$256,277	\$0.035	\$80,599	\$13,330	\$350,205	2	(\$188,654)	(\$184,152)	(\$6,733)	(\$379,539)	2	(\$29,334)	\$1,291,858
2026	3	2,291,307	\$0.0897	\$205,431	\$0.035	\$80,196	\$13,330	\$298,956	3	(\$195,540)	(\$177,266)	(\$6,868)	(\$379,674)	3	(\$80,718)	\$1,211,141
2027	4	2,279,851	\$0.0927	\$211,310	\$0.035	\$79,795	\$13,330	\$304,434	4	(\$202,677)	(\$170,129)	(\$7,005)	(\$379,811)	4	(\$75,377)	\$1,135,763
2028	5	2,268,451	\$0.0977	\$221,547	\$0.035	\$79,396	\$13,330	\$314,273	5	(\$210,075)	(\$162,731)	(\$7,145)	(\$379,951)	5	(\$65,679)	\$1,070,084
2029	6	2,257,109	\$0.0987	\$222,846	\$0.035	\$78,999	\$13,330	\$315,174	6	(\$217,743)	(\$155,064)	(\$7,288)	(\$380,094)	6	(\$64,920)	\$1,005,164
2030	7	2,245,824	\$0.1001	\$224,846	\$0.035	\$78,604	\$13,330	\$316,780	7	(\$225,690)	(\$147,116)	(\$7,434)	(\$380,240)	7	(\$63,460)	\$941,704
2031	8	2,234,595	\$0.1035	\$231,184	\$0.035	\$78,211	\$13,330	\$322,724	8	(\$233,928)	(\$138,878)	(\$7,582)	(\$380,389)	8	(\$57,664)	\$884,039
2032	9	2,223,422	\$0.1070	\$237,802	\$0.035	\$77,820	\$13,330	\$328,952	9	(\$242,466)	(\$130,340)	(\$7,734)	(\$380,540)	9	(\$51,589)	\$832,450
2033	10	2,212,304	\$0.1108	\$245,162	\$0.035	\$77,431	\$13,330	\$335,922	10	(\$251,316)	(\$121,490)	(\$7,889)	(\$380,695)	10	(\$44,773)	\$787,677
2034	11	2,201,243	\$0.1115	\$245,392	\$0.035	\$77,044	\$13,330	\$335,765	11	(\$260,489)	(\$112,317)	(\$8,047)	(\$380,853)	11	(\$45,088)	\$742,589
2035	12	2,190,237	\$0.1121	\$245,629	\$0.035	\$76,658	\$13,330	\$335,617	12	(\$269,997)	(\$102,809)	(\$8,208)	(\$381,014)	12	(\$45,397)	\$697,193
2036	13	2,179,286	\$0.1128	\$245,875	\$0.035	\$76,275	\$13,330	\$335,479	13	(\$279,852)	(\$92,954)	(\$8,372)	(\$381,178)	13	(\$45,699)	\$651,494
2037	14	2,168,389	\$0.1135	\$246,128	\$0.035	\$75,894	\$13,330	\$335,351	14	(\$290,067)	(\$82,739)	(\$8,539)	(\$381,345)	14	(\$45,994)	\$605,500
2038	15	2,157,547	\$0.1142	\$246,388	\$0.035	\$75,514	\$13,330	\$335,232	15	(\$300,654)	(\$72,152)	(\$8,710)	(\$381,516)	15	(\$46,284)	\$559,215
2039	16	2,146,759	\$0.1149	\$246,655	\$0.035	\$75,137	\$13,330	\$335,122	16	(\$311,628)	(\$61,178)	(\$8,884)	(\$381,690)	16	(\$46,569)	\$512,646
2040	17	2,136,026	\$0.1156	\$246,930	\$0.035	\$74,761	\$13,330	\$335,020	17	(\$323,003)	(\$49,804)	(\$9,062)	(\$381,868)	17	(\$46,848)	\$465,798
2041	18	2,125,345	\$0.1163	\$247,143	\$0.035	\$74,387	\$13,330	\$334,860	18	(\$334,792)	(\$38,014)	(\$9,243)	(\$382,049)	18	(\$47,190)	\$418,609
2042	19	2,114,719	\$0.1170	\$247,363	\$0.035	\$74,015	\$13,330	\$334,707	19	(\$347,012)	(\$25,794)	(\$9,428)	(\$382,234)	19	(\$47,527)	\$371,082
2043	20	2,104,145	\$0.1177	\$247,588	\$0.035	\$73,645	\$13,330	\$334,563	20	(\$359,678)	(\$13,128)	(\$9,616)	(\$382,423)	20	(\$47,860)	\$323,222
2044	21	2,093,624	\$0.1181	\$247,182	\$0.035	\$73,277	\$13,330	\$333,788	21			(\$9,809)		21	\$323,979	\$647,202
2045	22	2,083,156	\$0.1185	\$246,780	\$0.035	\$72,910	\$13,330	\$333,020	22			(\$8,024)	(\$88,024)	22	\$244,996	\$892,198
2046	23	2,072,741	\$0.1189	\$246,384	\$0.035	\$72,546	\$13,330	\$332,259	23			(\$10,205)	(\$10,205)	23	\$322,054	\$1,214,253
2047	24	2,062,377	\$0.1193	\$245,992	\$0.035	\$72,183	\$13,330	\$331,505	24			(\$10,409)	(\$10,409)	24	\$321,096	\$1,535,348
2048	25	2,052,065	\$0.1197	\$245,605	\$0.035	\$71,822	\$13,330	\$330,757	25			(\$10,617)	(\$10,617)	25	\$320,139	\$1,855,488
2049	26	2,041,805	\$0.1201	\$245,221	\$0.035	\$71,463	\$13,330	\$330,014	26			(\$10,830)	(\$10,830)	26	\$319,185	\$2,174,672
2050	27	2,031,596	\$0.1205	\$244,842	\$0.035	\$71,106	\$13,330	\$329,277	27			(\$11,046)	(\$11,046)	27	\$318,231	\$2,492,903
2051	28	2,021,438	\$0.1209	\$244,466	\$0.035	\$70,750	\$13,330	\$328,546	28			(\$11,267)	(\$11,267)	28	\$317,279	\$2,810,182
2052	29	2,011,330	\$0.1214	\$244,093	\$0.035	\$70,397	\$13,330	\$327,819	29			(\$11,493)	(\$11,493)	29	\$316,327	\$3,126,508
2053	30	2,001,274	\$0.1218	\$243,710	\$0.035	\$70,045	\$13,330	\$327,084	30			(\$11,722)	(\$11,722)	30	\$315,361	\$3,441,870
2054	31	1,991,267	\$0.1222	\$243,327	\$0.035	\$69,694	\$13,330	\$326,351	31			(\$11,957)	(\$11,957)	31	\$314,394	\$3,756,264
2055	32	1,981,311	\$0.1226	\$242,945	\$0.035	\$69,346	\$13,330	\$325,620	32			(\$12,196)	(\$12,196)	32	\$313,424	\$4,069,688
2056	33	1,971,405	\$0.1230	\$242,563	\$0.035	\$68,999	\$13,330	\$324,892	33			(\$12,440)	(\$12,440)	33	\$312,452	\$4,382,140
2057	34	1,961,548	\$0.1235	\$242,182	\$0.035	\$68,654	\$13,330	\$324,166	34			(\$12,689)	(\$12,689)	34	\$311,477	\$4,693,617
2058	35	1,951,740	\$0.1239	\$241,802	\$0.035	\$68,311	\$13,330	\$323,442	35			(\$12,942)	(\$12,942)	35	\$310,500	\$5,004,117
2059	36	1,941,981	\$0.1243	\$241,422	\$0.035	\$67,969	\$13,330	\$322,721	36			(\$13,201)	(\$13,201)	36	\$309,520	\$5,313,636
2060	37	1,932,271	\$0.1247	\$241,043	\$0.035	\$67,629	\$13,330	\$322,002	37			(\$13,465)	(\$13,465)	37	\$308,537	\$5,622,173
2061	38	1,922,610	\$0.1252	\$240,664	\$0.035	\$67,291	\$13,330	\$321,285	38			(\$13,735)	(\$13,735)	38	\$307,550	\$5,929,723
2062	39	1,912,997	\$0.1256	\$240,286	\$0.035	\$66,955	\$13,330	\$320,571	39			(\$14,009)	(\$14,009)	39	\$306,561	\$6,236,284
2063	40	1,903,432	\$0.1260	\$239,909	\$0.035	\$66,620	\$13,330	\$319,858	40			(\$14,289)	(\$14,289)	40	\$305,569	\$6,541,853
Years 1-25				\$6,040,079		\$1,908,121		\$9,601,064	Years 1-25			(\$289,451)	(\$7,745,576)	Years 1-25	\$1,855,488	
NPV				\$3,386,893		\$1,089,100		\$5,920,644	NPV			(\$140,103)	(\$4,786,093)	NPV	\$1,134,551	
Years 1-40				\$9,678,553		\$2,943,351		\$14,474,711	Years 1-40			(\$476,732)	(\$7,932,858)	Years 1-40	\$6,541,853	
NPV				\$4,131,440		\$1,301,600		\$6,918,549	NPV			(\$177,692)	(\$4,823,682)	NPV	\$2,094,866	