

BURLINGTON
BOARD OF ELECTRIC COMMISSIONERS
585 Pine Street
Burlington, Vermont 05401

GABRIELLE STEBBINS, CHAIR
SCOTT MOODY, VICE CHAIR
JIM CHAGNON
ROBERT HERENDEEN
BETHANY WHITAKER

To be held at Burlington Electric Department (or)
Via Microsoft Teams

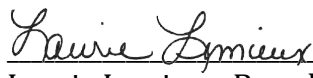
[+1 802-489-6254](tel:+18024896254)

Conference ID: 154 453 814#

AGENDA
Regular Meeting of the Board of Electric Commissioners
Wednesday, October 13, 2021– 5:30 p.m.

- | | |
|---|----------------|
| 1. Agenda | 5:30 (5 min.) |
| 2. Minutes of the September 8, 2021 Meeting | 5:35 (5 min.) |
| 3. Public Forum | 5:40 (5 min.) |
| 4. KPMG Audit Presentation (Expected Executive Session)
(Discussion and Vote): Emily Stebbins-Wheelock | 5:45 (20 min.) |
| 5. Commissioners' Corner (Discussion) | 6:05 (5 min.) |
| 6. GM Update (Oral Update) | 6:10 (15min.) |
| 7. Pilot Project with Neothermal Contract
(Discussion and Vote): J. Gibbons | 6:25 (10 min.) |
| 8. Pilot Project with ARC Contract (Discussion and Vote): J. Gibbons | 6:35 (10 min.) |
| 9. Commissioners' Check-In | 6:45 (5 min.) |

Attest:



Laurie Lemieux, Board Clerk

If anyone from the public wishes to speak during the public forum portion of the Commission Meeting and/or wishes to be present for the Meeting of the Board of Electric Commission via Microsoft Teams, please email llemieux@burlingtonelectric.com to receive a link to the meeting, or call (802) 489-6254, Conference ID: 154 453 814#

Note: Members of the public may speak during the Public Forum, or when recognized by the Chair during consideration of a specific agenda item.

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(for 10/13/21 meeting)

***** FYI *****

- Minutes of the September 8, 2021 Meeting
- September Monthly Report
- Dashboard
- FY 21 August Financials
- Neothermal Energy Storage, Inc. Project Agreement
- ARC Industries, Inc. Project Agreement



MEMORANDUM

To: Burlington Board of Electric Commissioners
From: Darren Springer, General Manager
Date: October 7, 2021
Subject: **September 2021 Highlights of Department Activities**

General Manager

- **Rate Case** – BED attended the PUC public hearing on 10/6/21, but only one member of the public attended, and he was not actually a BED customer. BED has been in the process of responding to discovery questions.
- **Arrearage Assistance** – We continue to work with customers on VCAAP and VERAP state arrearage assistance options and expect on 10/18 City Council will consider approval for the \$1.3 million in arrearage assistance and temporary energy assistance funding for BED customers from the City/ARPA. We'll have through the end of FY22 to expend the City funds to support customer arrearage reductions but are focused first on utilizing the state funds available.
- **District Energy** – I joined with Michael Ahern from EverGreen to provide a verbal update on our progress to the TEUC committee of the City Council. Currently BED is working with McNeil Joint Owners on a draft term sheet, working on a filing with the PUC to get a declaratory ruling on the project's Tier 3 characterization, and renewing outreach again to potential customers on what type of commitment they can make to purchase DES output.
- **Revenue Bond** – I've started visiting the NPAs to present on the Revenue Bond, with Wards 4/7 in September, and Ward 6 on October 7th, with Wards 1/8 and 2/3 planned for October 13th and 14th. We've also published a commentary explaining the Revenue Bond proposal in the North Avenue News, and in VTDigger - <https://vtdigger.org/2021/09/28/darren-springer-a-burlington-investment-in-reliability-and-climate-progress/> and we also expect an article in Green Energy Times on the Bond as well. In addition, BED is planning to launch a new Net Zero Energy podcast, with the Revenue Bond being the first topic (with Commission Chair Stebbins joining us for that episode).
- **Legislative Updates** – BED has been in touch with APPA, and the Congressional Delegation, regarding questions about the potential Clean Electricity Payment Program (CEPP) in the federal reconciliation legislation that is pending. The Program as passed by the House Energy & Commerce Committee would exempt utilities that are 85% or more "clean" from potential penalties and offers incentive payments for utilities that increase their percentage of "clean" electricity year-over-year by certain targets. The challenge is that the legislation is vague on what qualifies as clean, and in particular it is unclear if biomass would be considered on a lifecycle basis or only based on emissions at the plant. If the latter, BED would be unfairly penalized under the legislation, while utilities that invested in nuclear would be treated more favorably. This is at odds with Burlington and Vermont renewable procurement policies, and we've requested the Delegation consider

adding an alternative exemption that if a utility is 85% or more renewable under state renewable portfolio standards, that utility should also be exempt from federal penalties. If this legislation advances, it could have major impacts on state and regional renewable energy policies.

We expect there will be renewed interest in changes to Vermont's RES to move toward a 100% target instead of the current 75% by 2032, but the details of that remain unclear. If such legislation advanced at the state level, BED would advocate to continue to retain its exemptions as a 100% renewable utility from existing or new procurement requirements, but BED would also consider requesting the Legislature increase our Tier 3 requirements for strategic electrification projects if the Revenue Bond proposal is successful and BED would have funding to support a higher level of Tier 3 projects.

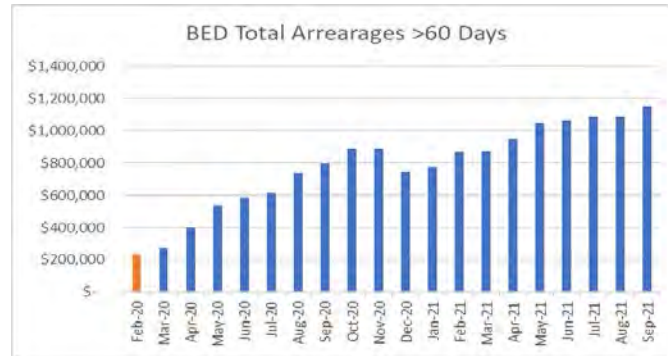
- **Employee Appreciation Lunch** – The Employee Appreciation Lunch has been rescheduled to October 28 from 11:30 am – 1:00 pm and will be a hybrid event with a Microsoft Teams option, as well as in-person in the garage bay with the doors open for good ventilation. We'll be spacing tables to ensure appropriate distancing is possible and will be bringing in food from Bove's instead of cooking on-site this year. If any Commissioners are interested to join please let Laurie know.
- **Drive Electric Events** – BED is joining with GMP for several Drive Electric events this month, including one that already took place on Church Street, and another coming up on the 21st from noon to 2pm at Hula.

Center for Innovation - Emily Stebbins-Wheelock

- Recruiting for Director of Information Technology and Director of Finance positions; acting supervisor of Information Services and Finance & Accounting staff.
- Reviewed next COVID-19 employee engagement survey.
- Continued engagement with Department of Public Service and GDS Associates re rate case investigation.
- CFI team participated in NZE revenue bond press event at BED and attended Board of Finance and City Council meetings on revenue bond.
- Continued sponsorship of IT Forward implementations.
- Sponsoring internal team reviewing rebate process for efficiencies and effectiveness.
- Liaison with DPS on State of Vermont COVID19 arrearage assistance program.
- Facilitating a white accountability group for City employees sponsored by the Racial Equity, Inclusion and Belonging (REIB) Office.

Finance & Accounting

- Preparing audit deliverables and working with the external auditors on the FY2021 audit.
- Continued work on changes to Tier 3 and REC accounting practices.
- Responded to first round of Discovery questions in rate case investigation.
- Monitoring receivables in response to COVID19: as of September 30, 2021, BED's total non-current receivables had increased \$86,588 or 6% compared to the end of August 2021. Arrearages >60 days were \$1,150,254.



Billing & Analytics

- Functional lead for MDMS replacement and team member on Customer Portal replacement projects, with work on data integrations, data migration, documentation, and data cleanup.
- Attended Itron roadmap workshops.

Information Services

- Completed setup and staff training for new Data Center; planning for server migration.
- Participation in IT Director candidate interviews.
- Continued work on IT Forward projects: secure file transfer, AMI integration, data extracts for CIS daily syncs, and MDMS data conversion.
- Planning for next FIS/CIS upgrade.
- Researching possible phone system replacement solutions.
- Intune/ABM pilot of iPads continuing.

Policy and Planning

- Met with PSD and GDS (consultant) and responded to PSD Discovery requests in rate filing.
- Filed update to EEC charges reflecting Act 151 and other adjustments.
- Continued work on McNeil term sheet for Thermal Energy.
- Attended PUC net-metering rulemaking workshop on compensation.
- Filed accounting order request with PUC.
- Monitor winter 2021-2022 price increases and impact.
- Support for FY21 financial audit.
- Presented at Cleveland 2030 District education meeting.
- Drafted contracts for 2021 DeltaClima pilots (ARC and Neothermal).
- Develop revised accounting treatment for RECs and Tier 3.
- Continued engagement in Global Foundries docket.
- Support for VPPSA energy purchasing discussions.

Sustainability and Workforce Development

- Continued management of the Ventilation Improvement Program, which has supported ventilation advancement in 7 non-profits and businesses. Developed an outreach video that describes the health and safety benefits of ventilation and features the Champlain Valley Office of Economic Opportunity (CVOEO).

- Participated in Energy Action Network (EAN) Summit and finalized work in EAN Pitch selection committee.
- Launched work under the American Public Power Association Demonstration of Energy and Energy Developments grant. Strategized the roles of BED's Energy Services team, VGS, and the Burlington 2030 District in creation of Property Energy Plans for multi-unit dwelling property owners.
- Coordinated National Drive Electric Week event on Church Street in conjunction with Green Mountain Power, including a display of fleet vehicles on City Hall block.
- Orchestrated BED staff and Commission tour of Hula's campus, including building's role in the NZE strategy.
- Continued to coordinate with Department of Permitting and Inspections on the Energy Efficiency in Rental Properties Ordinance, including outreach and communication to property owners.
- Met with Burlington School District Facilities Manager regarding the Renewable Heating Ordinance and technical and financial support available from BED to the District.
- Participated in state-level "Weatherization at Scale" team meeting; orchestrated call with NYSERDA's retrofit program to consider replicability in Vermont.
- Along with other BED and VGS staff, toured the Glavel facility in Essex. Glavel, based at Hula, specializes in manufacturing lightweight aggregate from recycled glass.
- Co-chaired second and third meetings of the Employee Engagement Committee, which discussed restructuring BED's Innovation Cup to better celebrate staff creativity, ingenuity, and process improvement work.
- Drafted third employee survey, designed to capture employee feedback, and assess vehicle miles traveled during the remote work pilot. Coordinated with Chittenden Area Transportation Management Association and Human Resources on data collection and analysis in preparation for survey launch end of October.

Center for Safety and Risk Management – Paul Alexander

Safety

- Participated in a Teams meeting with VELCO in regard to Dig Safe and VELCO fiber cables in BED conduit primarily up Main Street
- Completed about half the line crew on annual pole top/ bucket rescue refresher.
- VELCO Switching & Tagging refresher training completed for 3-line crew employees with 4-line crew remaining.
- Held Tour Cup recap internal meeting to discuss how the reaction arm worked to open black railcar doors.
- Called and spoke with Mike Hughes of IHMS PT in regard to ergonomic review of opening railcars. Mike Hughes is scheduled for Tuesday, October 12th @ 12:30pm to be on location at the train trestle.
- Scheduled forklift classes specific to McNeil for Tuesday, September 28, and Tuesday October 12.

Environmental

- Completed the annual SWPPP facility walkthrough.
- Conducted thorough troubleshooting on the CEMs system with consultants.

- Performed monthly wastewater sampling and reporting.

Risk Management

- Claims Investigations 4 total (2 Property, 2 Other).
- Continued research, effort, planning, and correspondence on Coronavirus (COVID -19) along with return-to-work plans, health officers, city face mask policy, vaccinations, signage, etc.
- Create CY'22 insurance estimates for Joint Owners.
- Coordinated Dept. of Homeland Security's physical security on-site training visit at McNeil (9/30/21).
- Sat in on CISA Active Shooter webinar.

Purchasing/General Services

- Dealt with numerous issues with GT AC units.
- Met with the Woolen Mill over issues with overgrown trees encroaching on their property.
- Had a meeting with Lyon on our new all electric bucket truck.
- Met with the State on our progress with our VW Grant and electric bucket truck.
- Meeting with the Distribution line crews and solution to our pole pile issue.

Center for Operations & Reliability – Munir Kasti

Engineering and Operations

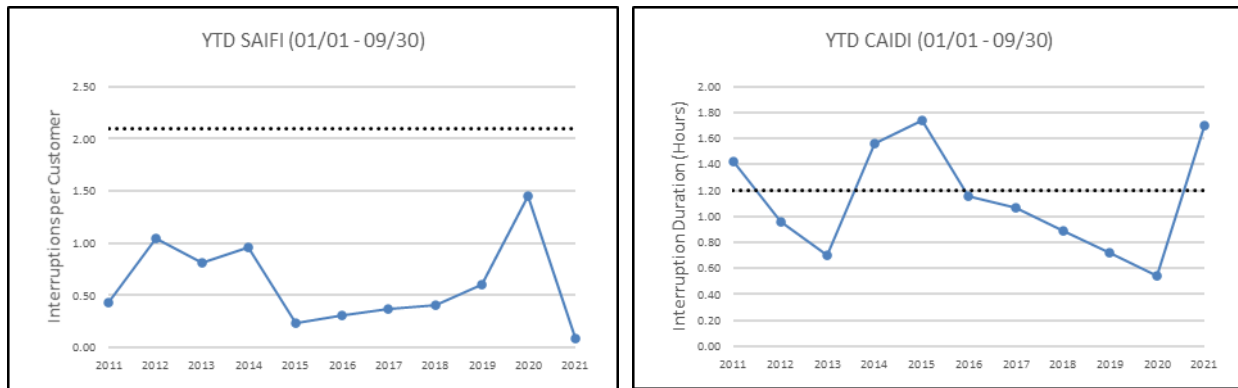
- Completed the rebuild of aerial secondary on Shelburne Street from Prospect Parkway to Alfred Street.
- Completed the aerial secondary rebuild and street lighting work on Richardson Street.
- Completed the installation of a second phase wire on Starr Farm Beach.
- Performed service disconnect/reconnect and installed new services at numerous locations in the city.
- Issued the work order and completed the replacement of aerial neutral conductor on 3L1 circuit along Prospect Parkway.
- Performed relay testing at McNeil Plant.
- Performed preventative maintenance on field devices.
- Troubleshooting of RTU issues at Winooski One Hydro.
- Worked with Radio North to swap out new radio repeater at McNeil.
- Performed routine inspections of major transformers, substations, and capacitor banks.
- Continued training at the Gas Turbine and in Dispatch.
- Conducted interviews and hired a Power System Coordinator I in the Grid Services area.
- Conducted interviews and hired a 2nd Year Apprentice Line Worker in the Distribution area.
- Removed graffiti from BED equipment at locations throughout the city.
- Completed the engineering design and work order for:
 - Rebuild of electrical system at Scarff Avenue.
 - New service at 336 No. Winooski Avenue.
 - Street lighting upgrades on North Avenue from Northgate Road to Derway Drive.

SAIFI & CAIDI Outage Metrics:

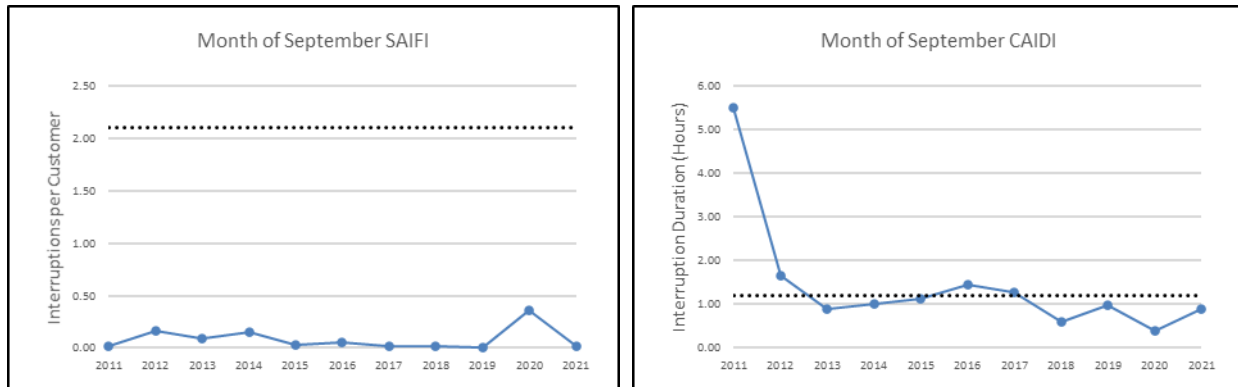
BED's distribution system experienced 15 outages in September 2021 (4 unscheduled and 11 scheduled). BED's SAIFI for the Month of September was 0.02 interruptions per customer and CAIDI was 0.9 hours per interruption. BED's YTD SAIFI is 0.08 interruptions per customer and YTD CAIDI is 1.7 hours per interruption.

The year-to-date CAIDI metric remains above the target of 1.2 hours due to fewer unplanned outages while the planned outages that have occurred required longer duration outages to safely maintain and replace equipment.

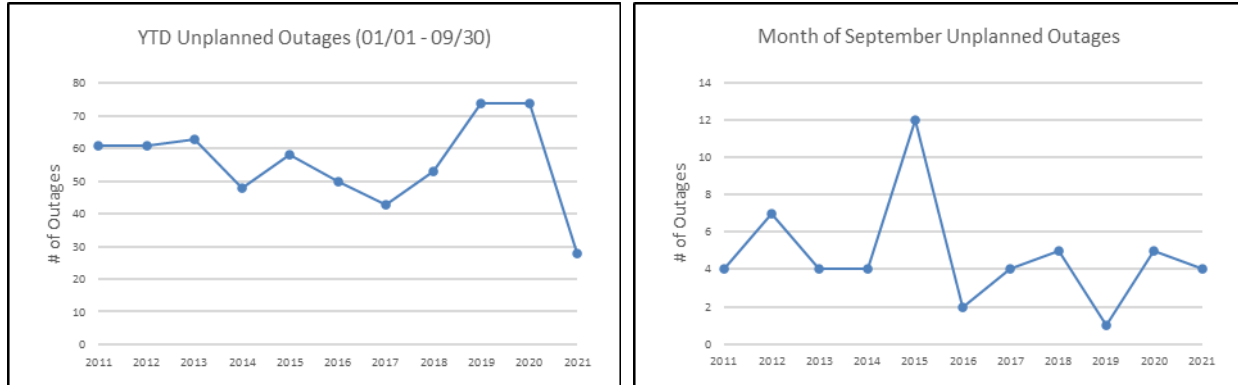
The following figure shows BED's historical YTD SAIFI and CAIDI:



The following figure shows BED's historical September SAIFI and CAIDI:



The following figure shows BED's historical Unplanned Outages:



GENERATION

McNeil Generating Station, September 2021

Month Generation:	11,587.0 MWh
YTD Generation:	208,650 MWh
Month Capacity Factor:	32.2%
Month Availability:	79.7%
Hours of Operation:	251.1 Hours

Railcar maintenance was performed during the month of September. After 6 years of service Auxiliary Operator Arthur Blakesley is resigning, his last day of work is October 8, 2021. We posted for 3 open positions at the plant during September, Generation Generalist, Auxiliary Operator, and a Yard-Worker.

Winooski 1, September 2021

Monthly Generation:	921.009 MWH (91.825% of average)
YTD Generation:	17,305.233 MWH (78.021% of average)
Month Capacity Factor:	17.586%
Annual Capacity Factor:	35.69%
Month Availability:	97%

The annual overhaul for Winooski 1 is being performed during the month of September.

Burlington Gas Turbine, September 2021

Month Generation:	15.348 MWh
YTD Generation:	351.145 MWh
Month Capacity Factor:	0.111%
Month Availability:	100.000%
Hours of Operation Unit A:	1.1
Hours of Operation Unit B:	1.1

There was one self-scheduled operation of the asset during the month for Operator training and equipment functionality testing. The asset is fully functional and in service at the end of the month.

Solar (Pine Street 107 kW)

Month Generation: 10 MWh (-11% from previous year)
 YTD Generation: 94 MWh
 Month Capacity Factor: 13%
 Month Availability: 100%

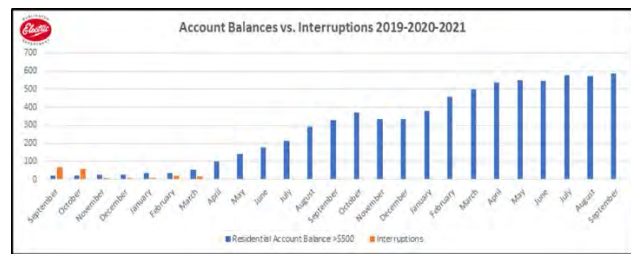
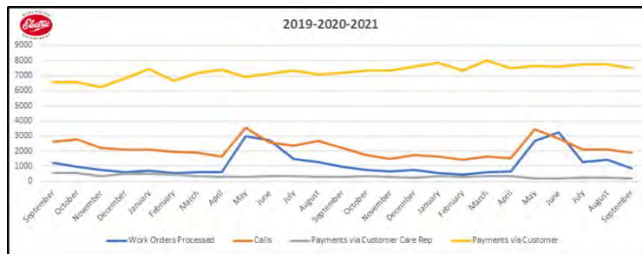
Solar (Airport 499 kW)

Month Generation: 53 MWh (-12% from previous year)
 YTD Generation: 486 MWh
 Month Capacity Factor: 14%
 Month Availability: 100%

Center for Customer Care & Energy Services – Mike Kanarick

Customer Care

- **Call Answer Time (75% in 20 seconds):** September 2021 82.4%, August 81.5%, July 81.6%, June 69.3%, May 65.8%, April 91.0%. September 2020 84.3%, August 72.1%, July 78.6%, June 74.8%, May 65.9%, April 86.9%. Call answer time improved nearly 1% from last month and down nearly 2% from same time last year.
- **September 2021 Stats:** please see dashboard for additional metrics categories.



Communications and Marketing

- **Temporary Energy Assistance Program** to offset 7.5% rate increase: to help offset BED's first-rate increase in 12 years that has begun to appear as a surcharge on customer bills in August, we are offering income-qualified customers temporary assistance in the form of a monthly bill credit through June 2022. So far 39 customers have applied with 28 approved and 11 awaiting verification. Customers can learn about eligibility requirements and apply by visiting burlingtonelectric.com/rates.

- Vermont COVID-19 Arrearage Assistance Program (VCAAP II): The Vermont COVID-19 Arrearage Assistance Program (VCAAP) that was active last fall is back. VCAAP II provides financial support to residential (homeowners and renters) and commercial customers who may face disconnection of service because of past-due balances for their electric, landline telephone, natural gas, water, or sewer/wastewater charges. Vermonters must apply before October 24, 2021, and grants will be awarded on a first-come, first-served basis until funding runs out or the program ends. Customers may visit bit.ly/vtbills to apply. So far, BED has approved 135 of 164 applicants for a total of \$100,581, of which BED has received \$17,301. VCAAP 1.0 ended in mid-December 2020; BED was successful in securing for our customers \$345,437 (\$259,098 residential and \$86,339 commercial) in grants
- Vermont Emergency Rental Assistance Program (VERAP - erap.vsha.org): launched by State in April “to help alleviate income pressure on tenants and landlords and restore stability to the rental community.” VERAP will help tenant households with paying rent, as well as paying utility and home energy costs. BED has approved 280 of 461 program applicants, totaling approximately \$200,378, of which BED has received \$150,000.
- Defeat the Peak: we called peak events during the evenings of August 12, 13, and 26 and the communications team alerted the community through press releases, blast e-mails and social media. We were successful at defeating the peak on all three occasions. Not only did we help the environment, but also we awarded \$1,000 each to our nonprofit partners, [The Curtis Fund](#) (provides scholarships to VT students pursuing post-secondary education), [ANEW Place](#) (helps fight homelessness), and [Let's Grow Kids](#) (works to ensure affordable access to high-quality child care for all VT families).
- Art Hop sponsorship: BED partnered with our friends at SEABA to sponsor Art Hop during the weekend of September 10-12. This year, Art Hop was an in-person event with online and virtual components. BED's 585 Pine Street building was part of “Light Hop” – SEABA partner Satellite Arts productions installed LED lighting on our building, which looked quite beautiful, as did other participating buildings on Pine Street. BED provided the grocery bags (along with coloring books and lineworker pens) that Art Hop used for creating goodie bags for Kids Hop.
- North Avenue News: October column was a commentary by General Manager Darren Springer about the Net Zero Energy Revenue Bond. Our October ad promotes various financial assistance opportunities for our customers, including our temporary energy assistance program (allowing low-income customers to offset the 7.5% rate increase), VCAAP II, and VERAP.
- September 2021 Website and Facebook Highlights
 - We launched our new www.burlingtonelectric.com website in July. The new site is built on the Wordpress platform and provides more security and easier updating and upgrading capabilities.
 - Website traffic throughout year
 - Overall site-wide pageviews for September – 21,327
 - August = 22,962
 - July = 23,727
 - June = 25,159
 - May = 28,428
 - April = 22,745
 - March = 21,463

- February = 18,773
 - January = 20,402
 - December 2020 = 18,797
 - November = 19,638
 - October = 20,661
 - September = 23,850
-
- Unique homepage pageviews for September = 6,905
 - August = 8,464
 - July = 7,931
 - June = 7,484
 - May = 7,499
 - April = 5,404
 - March = 5,775
 - February = 5,165
 - January = 7,571
 - December 2020 = 5,561
 - November = 7,071
 - October = 5,844
 - September = 9,266

Full site traffic for September 2021

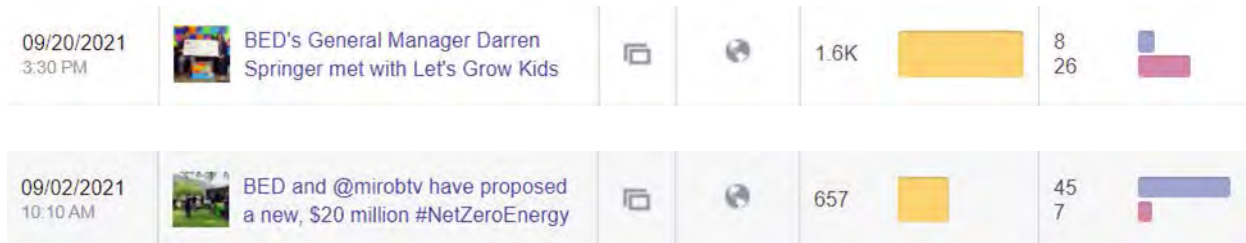


- Visitors by website page – please note that some of the columns indicate n/a as the page-specific URLs changed when we launched our new website. We will continue to track this information, which will become more meaningful each month.

page title	Sep 2021	Aug 2021	July 2021	June 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021	Dec 2020	Nov 2020	Oct 2020	Sept 2020
Burlington Electric Department	7845	8464	9164	9085	9667	6884	7234	6550	7571	7130	7071	7497	9277
My Bill	2943	2846	3033	3295	3235	3087	3228	3046	3532	3308	2995	3258	3651
Waste Wood Yard	1045	1082	1212	1160	1569	2034	1110	367	979	761	1756	1545	1303
Report A Problem	119	79	153	135	93	60	88	80	80	121	76	140	721
Stop or Start Service	454	867	803	1079	2599	622	337	279	336	277	330	366	502
E-billing	376	345	522	451	337	380	352	368	495	528	397	394	669
Contact Us	577	642	638	731	949	468	560	413	417	467	414	436	547
McNeil Generating Station	347	339	447	429	627	791	517	395	525	507	734	634	548
Heat Pumps	406	496	567	369	82	40	39	46	30	n/a	18	36	36
Rebates	566	571	621	795	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Rebate Center	530	667	679	319	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Green Stimulus	106	113	138	233	255	257	280	504	283	208	158	152	171
Stop or Start Service	454	867	803	1079	2599	622	337	279	336	277	330	366	502
Leadership Team	243	276	228	240	212	198	308	218	286	207	193	190	269
Rates & Fees	178	132	143	247	310	184	212	218	161	140	139	190	190
Usage Tracker Registration	94	154	177	223	107	118	150	196	185	209	147	154	201
RFP	452	497	455	158	143	439	393	471	404	258	387	400	383
Residential Ways to Save	172	191	172	220	217	173	175	163	137	159	137	212	172
Electric Vehicles	272	265	245	332	247	258	246	218	210	190	208	296	219
E-Bikes	168	265	207	192	223	242	196	117	106	109	117	131	174
Net Zero Energy News	204	129	115	178	210	132	187	195	228	179	225	222	241
Electric Vehicles	272	265	245	332	247	258	246	218	210	190	208	296	219
COVID-19 Updates	153	166	397	540	335	275	332	301	349	337	323	281	83
Our Energy Portfolio	96	59	42	n/a	51	110	102	101	49	51	53	84	125
Electric Lawn Mowers & Leaf Blowers	150	133	184	229	408	312	176	79	131	70	157	101	88
RFP Detail	258	334	185	n/a	23	401	199	414	303	148	293	321	403
Defeat The Peak	11	137	22	155	11	17	20	35	n/a	n/a	10	20	n/a
Commercial Ways to Save	98	55	39	62	26	46	59	33	37	41	34	53	33

- Top Facebook posts.

Defeat the Peak donation to Let's Grow Kids and the Net Zero Energy Revenue Bond announcements were the big attractions this month.



Blue: clicks / Red: comments, shares

Energy Services

UVM

- UVM Southwick Hall / IT Server Room Cooling Retrofit – BED is working with the project coordinator to estimate a rebate for the installation of a high-efficiency cooling unit for this space. A simple energy model was created by BED to estimate energy savings, to compare to the manufacturer's spreadsheet estimate. We confirmed the savings and have supplied a rebate offer to the customer.
- UVM Stafford Greenhouse / LED Grow Lighting – Funded by a grant, now all of the 18 new LED grow-light fixtures have been installed in the Stafford greenhouses. They were originally intended for greenhouse 10, but due to unforeseen factors, the fixtures have been installed in several of the greenhouses at this address. BED completed a site visit this month and has provided a rebate check to UVM.

UVMHC

- UVM Medical Center / Operating Room HVAC Re-Commissioning – Continued working with a local commissioning agent to develop a rebate proposal for the re-commissioning of the Air-Handling units which serve the main campus operating rooms.

Other Services

- Burlington Hotel / 60 Battery Street Facility Lighting Upgrade – BED was contacted by a LED lighting retro-fit contractor concerning a lighting upgrade planned for the Burlington Hotel. The last major lighting upgrades in the hotel were completed in 2013. The scope of this project is about 500 fixtures. BED is now evaluating the design to provide more information as to energy efficiency rebates for the project.
- Dealer.com / 444 Pine Street Facility Re-Lighting Project – BED has been contacted by Cox Automotive to re-initiate the lighting project. This project will replace the existing lighting with the latest LED lighting technology. Covid restrictions were responsible for delaying the implementation. The fixture installations are mostly complete this month. BED has updated the previous rebate offer that was based on an earlier lighting design. The lighting project is expected to be complete in early October, culminating in a final BED site walkthrough.
- Burlington Telecom / Audit Request – BED received a request to do an energy audit at the eight locations in Burlington that Burlington Telecom maintains. We have begun to analyze the energy use of each of the facilities to prioritize where to focus efficiency efforts firStreet Four of the eight accounts have significant annual energy costs.
- Soulshine Power Yoga / Ceiling Insulation Project – BED is working with the tenant in this space to improve the insulation and air-sealing in the ceiling. This is an electrically heated space using far-infrared technology and because of this, BED is better able to assist with incentives for this envelope improvement work.
- Cambrian Rise / Lauretide New Construction – This affordable multifamily has now been occupied for over a year. Energy model calibration is now in progress to verify that the building is running as efficiently as originally designed and built. Sub-metered energy usage data has been made available to BED this month to aid in our energy analysis.
- Cambrian Rise / Building B & G – The approximately 90-Unit multi-family is a combination of the renovation of an existing building (Building B) with an attached all-new construction structure (Building G). It was occupied at the end of 2020 when the first BED rebate payment was disbursed. BED is continuing to analyze the actual energy performance of the building to compare it with the earlier energy model predictions. A meeting with the original energy modeler is pending in order to complete model calibration.
- Cambrian Rise / Aurora – This new construction project involves Condo Buildings D, E, and F. Design is just beginning on this portion of the Cambrian Rise development. A preliminary energy model is now being created to see if the project’s potential energy savings are sufficient to invest in a more comprehensive model going forward. This project will need to comply with the City’s new “Renewable Energy Space Heating” Ordinance.
- 77 Pine Street Renovation / People’s United Bank Offices and Multifamily – The north side of this renovated building is bank offices and have been fully occupied since April 2021. Just being completed is the renovation of the south side of the building, which consists of 70+ apartment units. These will be completed in late October or early November 2021. BED is financially

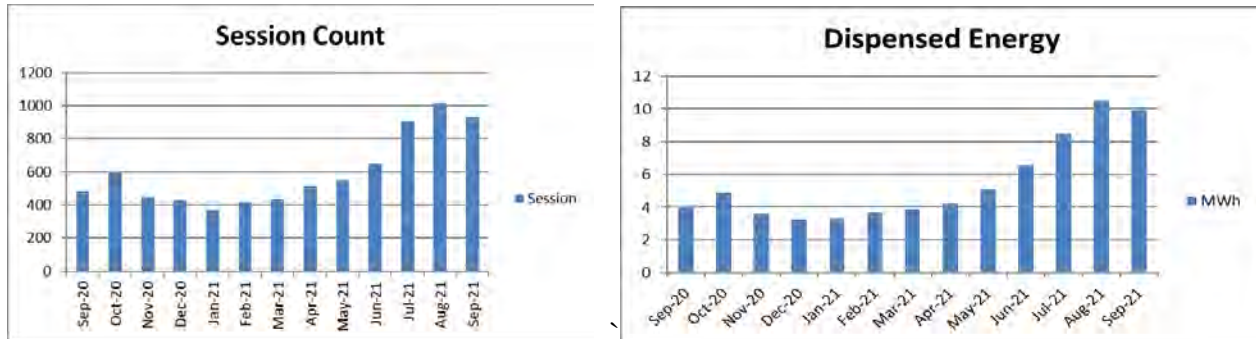
supporting the envelope commissioning of this building. A pre-blower door test meeting was held this month, with the blower door test being scheduled for the full structure in early November. BED is actively working through energy model calibration of the bank side of the building with the owner and the modeler.

- CEDO Ventilation Improvement Program - CEDO has received the scope of work specifications from all commercial candidates. Several customers have gotten the go-ahead to proceed with projects while others are still under review. The BED team is involved in reviewing the submitted scope of work.
- Unitarian Universalist Church - This Church Street icon is considering an energy efficiency/net zero energy consulting proposal. This was the result of a recent RFP issued by the congregation to provide a cost-effective path to eliminate site fossil emissions. By upgrading the envelope and equipment there is a Net Zero path here as the church has a large PV array and a portion of the HVAC system is heat pump. The July Cx Associates proposal was the one selected from their RFP. BED and VGS have already had kick off meetings regarding the initial phases.
- Art's Riot Renovation - Current discussions with VGS regarding distillery ventilation opportunities.
- Foam Brewers - Working with them on two Energy Star qualified dishwashers and one natural refrigerant Energy Star refrigerator for their bar at 112 Lakeside.
- Spectrum Youth & Family Services - Spectrum reached out regarding a new HVAC system for their 5,300 sq ft space at 191 North Street. There is no existing ducting, so we spoke about the benefits of VRF. Spectrum is getting a scope of work/quote from the contractor so we can see what opportunities there are.
- Garuka Bars - Recently undergoing weatherization and addition of cold climate heat pumps.
- Dust and Form Studio - Owner contracted BED regarding a second electric kiln for her new studio on Flynn Avenue. ES assisted in estimating operating costs of the first kiln and likely cost increases with a second kiln.

Electric Vehicles

- The EVSE dispensed a total of 9.9 MWh and supported 932 sessions.
- The top 3 sales were 63, 69 & 88 kWh and occurred at the Cherry Street & College Street garages.
- The top 10 sessions (1.07% of total) accounted for 6.3% (623 kWh) of the total monthly sale. The ten sessions ranged from 55 kWh-88 kWh.
- The Pine Street DC fast charger accounted for 20 of the 932 sessions and dispensed 2.7% of the total energy. It was out of service for 20 days this month. The Marketplace Garage station is not able to be repaired. DPW has been notified, a sign will be applied, and its online presence will be removed.
- The EVSE served 455 unique drivers.
- The pricing policy for all the stations except the 4 located at College Street and Cherry Street was incorrectly applied for 3-wks. All energy costs were accounted for however, the \$1/hr. parking fee for vehicles parked longer than 4 hours was not collected.
- DPW expressed frustration about how the station message states that *parking is free*. A recent station software upgrade presents the pricing rule in a manner that has caused increased confusion to EV drivers new to our network. Drivers have been calling DPW after receiving a parking ticket. DPW approved a clarifying message that will be applied to all stations that are subject to City parking fees.

- UVM Carrigan Drive station hasn't dispensed energy since early June. Historically, ChargePoint or drivers will call/email to report issues, either of which have occurred. A ticket has been submitted to ChargePoint.
- Session *Count* and *Dispensed Energy* plots from the from the public charging network are shown below.



- Number of EV and PHEV rebates to date – 302 (of this 44 LMI rebates to date as shown below)
 - New All Electric Vehicle – 134
 - New All Electric Vehicle (LMI) – 23
 - New PHEV – 83
 - New PHEV (LMI) – 20
 - Used All Electric Vehicle – 19
 - Used All Electric Vehicle (LMI) – 1
 - Used PHEV- 12
 - Used PHEV (LMI) - 1
 - All Electric Vehicle (\$50K plus) - 8
- Number of customer loans with lending partners to date – 5
- Number of customers currently participating in the new EV Rate- 77
- Number of EV home charging stations rebates to date – 49

Electric Lawn Equipment to Date

- Number of e-mower rebates to date – 388 (11 commercial & 377 residential)
- Number of e-leaf blowers to date – 24

Heat Pump Installations to Date (since the September 2019 NZEC announcement)

- Total Number of Heat Pump Technology rebates to date- 500 (of this 73 LMI rebates to date as shown below):
 - Number of space conditioning heat pumps to date (ductless and centrally ducted) – 411
 - Number of income-eligible space conditioning heat pump participants to date – 72
 - Number of heat pump hot water heaters to date – 16
 - Number of income-eligible heat pump hot water heaters participants to date – 1

Electric E-Bikes to Date

- Number of e-bike rebates to date – 253

Electric Induction Stove Tops to Date (new offering in Jan 2021)

- Number of induction Stove Tops rebates to date – 8

BED 2021-2022 Strategic Direction Dashboard

Metrics by Strategic Initiative	Target	Sept 2021 Actuals	Aug 2021 Actuals	July 2021 Actuals	June 2021 Actuals	May 2021 Actuals	Apr 2021 Actuals	Mar 2021 Actuals	Feb 2021 Actuals	Jan 2021 Actuals	2020 Yearly Actual	2019 Yearly Actual
Engage Customers and Community												
Call answer time 75% within 20 seconds	75%	82%	82%	82%	69%	65%	91%	89%	93%	87%	avg 81%	
Delinquent accounts >\$500	0	588	573	578	545	552	535	500	458	378	avg 201	
Disconnects for non-payment	0	0	0	0	0	0	0	0	0	0	45	
Opt-out customers		483	483	483	489	491	491	494	495	495		
Work orders processed		854	1456	1262	3239	2656	676	615	458	542		
# of calls received by Customer Care		1894	2111	2116	2859	3451	1554	1663	1442	1639		
# of calls received by answering service		16	29	99	175	186	49	60	48	127		
Web requests for termination		54	82	98	92	355	54	25	27	15		
Web requests for new service		12	42	22	38	215	16	8	10	11		
Credit card/eCheck transactions generated by Customer Care		176	226	241	210	215	329	367	306	357		
Credit card/eCheck transactions generated by customers		7519	7779	7767	7613	7670	7497	7988	7340	7869		
# of residential weatherization completions	10	0	1	0	1	1	0	1	0	0	3	11
Weatherization completions in rental properties		0	-	0	0	-	-	0	0	0	0	TBD
# or % of homes or SF weatherized		TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0
Champ Challenge weatherization participants		0	0	0	0	0	0	0	0	0	1	TBD
# of commercial building with improved thermal envelopes		1	1	0	0	1	0	1	0	0	5	0
% of EEU charge from LMI customers spent on EE services for LMI customers		TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Strengthen Reliability												
SAIFI (AVG interruptions/customer) (annual target)	< 2.1	0.02	0.002	0.06	0.02	0.01	0.004	0.01	0.004	0.002	1.50	1.03
CAIDI (AVG time in hrs to restore service) (annual target)	< 1.2	0.90	1.87	1.95	3.85	0.75	0.77	0.49	1.05	0.72	0.55	0.75
Distribution System Unplanned Outages (annual target)	82	4	4	7	3	0	1	3	2	4	90	98
McNeil Forced Outages	0	1	1	1	0	0	0	0	0	1	21	TBD
W1H Forced Outages	0	1	0	2	0	0	0	2	1	0	2	TBD
GT Forced Outages	0	0	0	0	0	0	0	1	0	1	3	TBD
Invest in Our People, Processes, and Technology												
Avg. # of days to fill positions under recruitment	120	81	76	64	60	47	65	35	77	62	179	
# of budgeted positions vacant	0	13	14	11	10	7	6	6	6	7	6	NA

BED 2021-2022 Strategic Direction Dashboard

[illegible]

BED 2021-2022 Strategic Direction Dashboard

Metrics by Strategic Initiative	Target	Sept 2021 Actuals	Aug 2021 Actuals	July 2021 Actuals	June 2021 Actuals	May 2021 Actuals	Apr 2021 Actuals	Mar 2021 Actuals	Feb 2021 Actuals	Jan 2021 Actuals	2020 Yearly Actual	2019 Yearly Actual
Manage Budget and Risks Responsibly												
<i>Safety & Environmental</i>												
No. of workers' compensation/accidents per month	0	0	1	0	0	1	0	2	0	0	8	
Total Paid losses for workers' compensation accidents (for the month)	\$225,000 annual	\$4,406	\$2,279	\$8,109	\$43,320	\$7,042	\$2,809	\$8,289	\$2,768	\$1,868	\$ 165,402	\$38,288
Lost Time Incident Rate (days/year) (Dec numbers reflect annual results)	<= 3.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.93	0.89
Lost Time Severity Rate (days/year) (Dec numbers reflect annual results)	<= 71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	41.71	78.2
Lost work days per month	0	0	0	0	0	0	0	0	0	0	45	
NOx reporting levels to EPA (Quarterly) (lbs/mmbtu)	<0.075	0.068	0.071	0.068	0.068	0.069	0.071	0.068	0.069	0.067	0.07	
# of reported spills, waste water incidents (monthly)	0	1	0	0	1	0	0	0	0	0	4	
Phosphorus levels to DEC in lbs (monthly/yearly total)	<0.8/37	.092/1.581	0.116/1.489	0.116/1.489	0.034/1.373	0.048/1.339	0.17/1.291	0.631/1.121	0.192/0.192	0.334/1.81		1.169
# of new power outage claims reported (monthly)	1	0	0	1	1	0	1	0	1	0	4	
# of new auto/property/other liability claims reported (monthly)	2	2	2	2	1	1	1	2	2	0	27	
<i>Purchasing & Facilities</i>												
# of Purchase Orders for Inventory (Target: avg for winter months)	42	51	112	56	37	30	32	53	28	90	593	
\$ value of Purchase Orders for Inv. (Target: avg dollars spent during winter)	\$78,000	\$91,052	\$1,871,500	\$98,535	\$105,330	\$65,173	\$31,021	\$139,566	\$193,052	\$91,356	975,531	
# of stock issued for Inventory (Target: avg during winter months)	320	495	336	420	406	265	501	272	334	315	4,545	
\$ value of stock issued for Inventory (Target: avg. during winter)	\$ 65,000	\$ 86,977	\$ 36,471	\$ 71,605	\$ 100,339	\$ 45,103	\$ 75,434	\$ 61,775	\$ 37,230	\$ 102,901	1,086,478	
# of posters pulled from poles monthly (Target: goal to remove each month)	58	364	503	237	205	185	221	176	72	165	627	
# of Spark Space and Auditorium setup/breakdowns monthly (Target: Covid impact)	3	26	6	6	9	4	4	8	1	1	87	
<i>Finance</i>												
Debt service coverage ratio	1.25		3.77	3.91	NA	4.05	4.47	3.89	4.01	3.56	NA-FY basis	NA
Adjusted debt service coverage ratio	1.5		1.01	0.96	NA	1.01	1.15	0.96	1.02	0.86	NA-FY basis	NA
Days unrestricted cash on hand	>90		125	116	NA	117	127	122	126	109	NA-FY basis	NA
<i>Power Supply</i>												
McNeil generation (MWH) (100%)	per budget	11,587	28,792	26,094	18,302	15,925	17,407	35,682	32,549	22,312	192,696	
McNeil availability factor	100%	80%	81%	71%	93%	95%	76%	100%	100%	61%		
McNeil capacity factor	per budget	32%	77.4%	70%	51%	42.8%	48.3%	95.9%	96.9%	59.9%		
Winooski One generation (MWH)	per budget	921	1,687	2,051	642	2,636	3,713	2,872	1,162	1,584	21,194	
Winooski One availability factor	100%	97%	99.8%	99.8%	100%	100%	96%	100%	90%	90%		
Winooski One capacity factor	per budget	18%	30.6%	37%	12%	48%	70%	52%	23%	29%		
Gas Turbine generation (MWH)	NA	15.3	118.1	87.0	32.6	15.4	18.5	29.4	17.8	16.9	441	
Gas Turbine availability factor	100%	100%	99.5%	100%	95%	100%	100%	99.9%	100%	99%		
Gas Turbine capacity factor	NA	0.11%	0.83%	0.61%	0.24%	0.09%	0.11%	0.17%	0.115%	0%		
BTV solar PV production (mWh)		471	588	542	644	642	525	548	190	107	5,182	
Cost of power supply - gross (\$000)			\$2,732	\$2,483	\$2,564	\$2,431	\$2,092	\$2,955	\$2,477	\$2,457	\$31,081	
Cost of power supply - net (\$000)			\$169	\$2,483	\$2,564	\$2,090	\$514	\$2,955	\$592	\$2,457	\$23,388	
Average cost of power supply - gross \$/KWH			\$0.08	\$0.085	\$0.090	\$0.097	\$0.086	\$0.111	\$0.095	\$0.089	\$0.100	
Average cost of power supply - net \$/KWH			\$0.01	\$0.085	\$0.090	\$0.084	\$0.021	\$0.111	\$0.023	\$0.089	\$0.076	

*****DRAFT*****
MINUTES OF REGULAR MEETING
BURLINGTON ELECTRIC COMMISSION

Wednesday, September 8, 2021, 5:30 pm

The regular meeting of the Burlington Electric Commission was convened at 5:32 pm on Wednesday, September 8, 2021 via Microsoft Teams Video Meeting.

Channel 17 was present via Microsoft Teams Video to record this meeting.

Commissioners Chagnon, Herendeen, Moody, and Stebbins, participated via Microsoft Teams at the beginning of the meeting. Commissioner Whitaker joined the meeting at 5:46

Staff members present included Darren Springer, Paul Alexander, James Gibbons, Mike Kanarick, Munir Kasti, Laurie Lemieux (Board Clerk, Dave MacDonnell, and Emily Stebbins-Wheelock.

1. Agenda

There were no changes to the Agenda.

2. August 11, 2021 Meeting Minutes

Commissioner Moody made a motion to approve the minutes of the August 11, 2021 Commission Meeting; the motion was seconded by Commissioner Herendeen.

The Board Clerk, Laurie Lemieux, conducted a roll call vote by calling on the following Commissioners:

Commissioner Chagnon. Aye
Commissioner Herendeen. Aye
Commissioner Moody. Aye
Commissioner Stebbins. Aye

Results: 4 Ayes with 0 Nays, the motion carries.

3. Public Forum

Mr. Tom Leitz was present for the meeting via Microsoft Teams.

4. Commissioners' Corner

Commissioner Herendeen thanked Mr. Kanarick for the information he provided regarding how the department estimates the number of houses for Defeat the Peak events.

Commissioner Herendeen complimented the department for the upcoming use of yard signs as a marketing tool to promote energy efficiency measures.

Commissioner Stebbins stated that she read in the monthly report that a net zero event was taking place on September 10 and asked what the event entailed.

Mr. Springer stated that, at the launching of the Net Zero Energy Roadmap, BED staff met with community stakeholders to get a sense of what their understanding was of the net zero concept, their thoughts on some of the work that we were doing, what areas they saw for additional outreach and improvements, such as marketing and letting customers know about some of these opportunities. At that time, we had a plan to get back together with this group but, due to COVID, we were unable to meet. The September 10 meeting has been scheduled to reconvene this group and continue to get feedback about how they view the Net Zero Energy Roadmap and initiatives.

Mr. Springer stated that this is not a public meeting, but rather an event being hosted at Hula to allow us to see some of the renewable energy initiatives going on at that facility. Mr. Springer stated that, in the next few months, he plans to bring some of the BED Leadership Team to the Hula campus and, at that time, will extend the invitation to members of the Commission who are interested in attending.

Commissioner Stebbins asked for more information regarding BED's participation with Leadership Champlain on local business owner perceptions of electric vehicle (EV) charging stations and also asked for additional information on the funding to support geothermal test wells.

Mr. Gibbons stated that he was part of the Leadership Champlain phone call and stated that there was a group at Leadership Champlain that completed a series of survey outreach questions for business owners about barriers and experiences around EV charging. Mr. Gibbons stated that a lot of the survey questions were very similar to a survey that BED's intern worked on this summer regarding residential charging. The department is looking at the possibility of taking the Leadership Champlain survey and marrying it with EV charging guide for multi-family dwellings that the intern worked on to create an EV charging guide for business owners.

Mr. Springer stated that, since our last meeting, we have received the order from the Public Utility Commission to approve our proposals for Act 151. This includes the ability to continue our Green Stimulus incentives through 2023. We also have new programs and initiatives that are part of that filing, including one initiative that addresses the concept that geothermal drilling and testing can be expensive and, depending on the proposed site, may be prohibitive for some. We will have funding in reserve to support geothermal test wells that will help customers know if their sites are

appropriate for geothermal. If so, we will have additional incentives that will help further with the project.

Commissioner Stebbins thanked Ms. Stebbins-Wheelock for updating the dashboard in regard to Strategic Direction percentage of goals.

Commissioner Stebbins ask if BED's rate case investigation is following the normal course for such investigations. Mr. Gibbons stated that it is not normal to have a consultant-led investigation for a rate case. Mr. Gibbons believes that the investigation is taking place this way because BED is the one of the largest municipalities and because BED has not filed a rate case since 2009. Mr. Gibbons added that there is a new commissioner and a new view of regulations and how rate cases should be examined, as well as this is the first big municipal rate case the Public Utility Commission has had to work on. Mr. Gibbons stated that we already have met with the consultants and shared information and that the official discovery starts September 10.

Commissioner Herendeen asked where BED is in regard to residential boilers using heat pumps. Mr. Springer stated that we do have air to water heat pump incentives available, although we haven't seen many of them. We have seen an increase in centrally-ducted heat pumps that have use of the furnace duct work.

5. GM Update

Mr. Springer stated that, on August 16, Moody's Investors Service affirmed BED's A3 rating with a stable outlook, on outstanding revenue bonds. This is a welcome development as we announce the new Net Zero Energy Revenue Bond proposal. Moody's cited the action by BED to adjust rates this year as a key factor in supporting affirmation.

Mr. Springer stated that there has not been much progress with district energy over the last few months, and discussions over term sheets between the Joint Owners, VGS, and Ever-Green have required more intensive work. We hope to make progress in the near future and have more to report next month.

Mr. Springer stated that BED has a mock-up of the new NZE yard signs to share. The yard signs will be given to customers who participate in our incentive programs so they can display the signs on their lawns with the goal of generating more attention around our Net Zero Energy efforts. Mr. Kanarick shared the mock-up of the sign along with examples of sticker options and stated that the type of incentive(s) the customer has taken advantage of will lead to BED supplying a corresponding sticker(s) to be displayed on the sign. It is the hope that this will start neighbors talking and that passers-by will ask questions and generate interest in BED's energy incentives.

Commissioners offered their suggestions regarding verbiage, color, and size, etc. Mr. Kanarick thanked the Commission and stated that the communications team will consider these suggestions.

Commissioner Stebbins stated that it would be great if BED could display running totals of Burlingtonians' uptake on NZE initiatives and stated that it may be possible to build upon the Vermont Energy Dashboard and leverage some of the work that's already been done. This dashboard allows you to upload the types of efforts each resident might make and is listed town-by-town and demonstrates how those communities are doing to reach their goals. Mr. Springer stated that this was a great idea and shared that BED also has fed data into the BTV Stat dashboard, which links up with some of our other data efforts in the past. BTV Stat is restarting this fall, creating the possibility of some symmetry between what we are doing for BTV Stat and what might be publicly shared along with the Commission dashboard.

Mr. Springer stated that he will be presenting the Net Zero Revenue Bond proposal to the City Council next week and will request the Net Zero Energy Revenue Bond question be placed on a November ballot for consideration by the voters of Burlington. At this time, Mr. Springer shared the slides that will be presented to the City Council.

Mr. Springer stated that the NZE Revenue Bond requires approval of a majority of Burlington voters. It's important to note that this bond is payable solely from BED rates and revenues, not from City General Fund or property taxes. BED has issued revenue bonds many times for projects (McNeil Generating Station construction, initial Energy Efficiency funding, AMI/Smart Grid infrastructure, the purchase of Winooski One Hydro Facility).

This \$20 million Net Zero Energy Revenue Bond proposal focuses on four key areas of investment to support reliability, and facilitate progress on Net Zero Energy:

- Approximately \$12.3 million for grid investment (\$7 million for reliability projects, \$5.3 million for Net Zero Energy projects);
- Approximately \$3.9 million for technology systems upgrades;
- Approximately \$2.2 million for power plant maintenance and converting the gas turbine to run on renewable biodiesel; and
- Approximately \$1.5 million for Net Zero Energy capital investments such as new EV charging stations, and demand response technologies.

The proposal also frees up annual BED General Obligation Bond capacity to support a doubling of investment in customer strategic electrification incentives between FY23-25, for a total of \$5.3 million in investment in those programs:

- By doubling our investment in strategic electrification incentives for customers between FY23-25, we cut an additional 47,000 tons of greenhouse gas emissions reduction (beyond business as usual), equivalent to nearly 100,000 barrels of oil;
- The investment during FY23-25 equals approximately 25% of what would be needed to be on track to meet the Net Zero Energy goals through Tier 3 investment alone during that timeframe, although we also contemplate city, state and federal policies and investments as well as partnerships with other key stakeholders as playing a major role in supporting progress toward the 2030 goal as well;

- The net incremental revenues from the additional strategic electrification projects are projected to be \$467,000 between FY25-32, providing a strong business case for this investment beyond the climate change benefits; and
- The strategic electrification projects funded between FY23-25 will provide enough revenue to cover approximately 40% of the debt service for the \$20 million revenue bond and the \$5.3 million of general obligation bond during their 20-year repayment.

The Net Zero Energy Revenue Bond is an investment in infrastructure for BED that is fiscally responsible for our customers and ratepayers:

- The average weighted life of the infrastructure investments in the revenue bond is nearly 28 years, well beyond the 20-year debt repayment schedule;
- Debt service on the revenue bond is timed in such a way to allow a maturity on an existing revenue bond to occur in 2025, providing \$684,000 in annual repayment capacity that can be applied to principal on the Net Zero Energy Revenue Bond;
- As discussed above, the customer incentive projects provide further revenue return to be used for repayment of the revenue bond and GO bonds;
- Making all of the investments discussed while maintaining our projected days cash on hand, with the revenue bond puts 4.9% of upward rate pressure for FY23, compared to 23.7% of upward rate pressure without the revenue bond; and
- The revenue bond is repayable only through BED revenues and does not affect the City's debt policy or debt ratio and does not affect property taxes or general fund expenditures.

The Commission asked several questions and asked for more detailed information. Mr. Springer stated that he would answer their questions in a detailed email that has been incorporated into these minutes.

June Financials:

Ms. Stebbins-Wheelock presented a graph showing the monthly impacts of COVID-19 on BED loads from March 2020 through the end of June 2021. In June 2021, BED's loads continued the pattern seen throughout the pandemic; residential sales were 6% higher, commercial sales were 6.3% lower, and overall system loads were approximately 3.2% lower than budgeted projections. Despite the lifting of statewide pandemic restrictions in June, several large employers have not yet returned their employees to the office, and we believe this is a major reason that commercial cooling loads are still trending below baseline levels.

Ms. Stebbins-Wheelock reviewed the budget-versus-actual results for the month of June FY21 and stated that these results are still changing and unaudited. For June, the Department has a preliminary net loss of \$1.5M compared to a budgeted net loss of \$374,000. We are projecting to fiscal year 2021 with a net loss of \$275K compared to the budgeted net income of \$1.9M. Both the June and FY2021 results include a \$1.2M pension expense adjustment (increase).

As of end of June, the Department had spent 65% of the FY2021 capital budget. Capital spending on

transmission and production/generation was approximately on budget. Distribution capital projects were the most affected by delays related to COVID, and some spending occurred on IT Forward. Commissioner Stebbins asked if the capital spending level was due to management decisions to defer projects to next year. Ms. Stebbins-Wheelock stated that this was the case for some projects, but other deferrals were customer-driven decisions or caused by supply chain delays.

On June 30, 2021, the Department had cash on hand of \$6.4M (\$213K below budget), 108 days' cash on hand, and an adjusted debt service coverage ratio of 1.00. Some of these metrics might change slightly based on the audited FY2021 financial statements.

July Financials:

Ms. Stebbins-Wheelock reviewed the budget-versus-actual results for the month of July FY22.

On the revenue side, sales to customers were under budget by \$389K and miscellaneous revenues were down by \$89K. Power supply expenses were favorable by \$125K, and operating expenses were favorable by \$336K. The Department ended July with a net loss of \$325K compared to budgeted net income of \$456K.

Capital spending in July was \$215K compared to a budget of \$437K, which is due to timing of projects. The new electric bucket truck was budgeted for July, but delivery has been delayed until July 2022.

As of July 31, cash on hand was \$6.9M, \$1.4M less than budget due to timing of the receipt of State and City arrearage funds. The Department reported 116 days' cash on hand and an adjusted debt service coverage ratio of 0.96.

6. Commissioners' Check-In

There were no Commissioner check-ins.

Commissioner Moody made a motion to adjourn; the motion was seconded by Commissioner Chagnon.

The Board Clerk, Laurie Lemieux, conducted a roll call vote by calling on the following Commissioners:


Commissioner Chagnon. Aye
Commissioner Herendeen. Aye
Commissioner Moody. Aye
Commissioner Stebbins. Aye

Commissioner Whitaker. Aye

Results: 5 Ayes with 0 Nays, the motion carries.

The meeting of the Burlington Electric Commission adjourned at 7:14 p.m.

Attest:


Laurie Lemieux, Board Clerk



*FY 2022
Financial Review
August*

October 4, 2021

Burlington Electric Department Financial Review

FY 2022

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FINANCIAL HIGHLIGHTS – BUDGET VS ACTUAL as of August FY22

(\$000)	Full Yr Budget	CURRENT MONTH			YEAR TO DATE		
		Budget	Actual	Variance	Budget	Actual	Variance
Sales to Customers	48,172	4,452	4,753	300	8,962	8,873	(89)
Other Revenues	3,978	300	250	(50)	638	500	(139)
Power Supply Revenues	8,404	2,458	2,563	105	2,458	2,563	105
Total Operating Revenues	60,554	7,210	7,566	356	12,058	11,936	(123)
Power Supply Expenses	32,155	2,650	2,732	(82)	5,258	5,215	43
Operating Expense	21,543	1,713	1,581	132	3,635	3,167	468
Depreciation & Amortization	6,007	501	493	7	1,001	1,022	(20)
Gain/Loss on Disp of Plant	291	143	130	13	143	130	13
Taxes	3,935	341	283	59	671	547	124
Sub-Total Expenses	63,932	5,348	5,219	129	10,708	10,081	627
Operating Income	(3,378)	1,863	2,347	485	1,350	1,855	505
Other Income	6,588	483	367	(116)	1,648	729	(919)
Interest Expense	2,402	197	196	1	394	392	2
Net Income (Loss)	808	2,148	2,518	370	2,604	2,193	(411)

Year-to-Date Results:

- **Sales to Customers** down \$89,000 (within 1% of budget). Residential Sales up \$244,700 and Non-Residential Sales down, \$336,000.
- **Other Revenues** down \$139,000 (21.7%)
DSM billable (customer driven) down \$118,700.
- **Power Supply Expenses** down \$43,000 (3%)
Purchased Power down \$142,000.
Transmission Fees down \$118,000.
Fuel up \$217,000.
- **Power Supply Revenues** up \$105,000 (4%)
McNeil REC revenue of \$1,605,000 compared to a budget of \$1,453,000.
Wind REC revenue of \$823,000 compared to a budget of \$821,000.
Hydro REC revenue of \$135,000 compared to a budget of \$149,000.
Other REC revenue of \$0 compared to a budget of \$35,000.
- **Taxes** down \$124,000 (18%)
Actual Payment in Lieu of Tax (PILOT) is less than budget assumption. This is projected to be a \$580,000 positive variance for the year.
- **Operating Expenses** down \$468,000 (12.9%)
Various items are less than budget. This includes outside services (\$326,900), materials & supplies (\$51,900), DSM (rebates & outside services) (\$62,000), transportation clearing(\$27,900), building clearing, (\$24,100), uncollectible accounts (\$19,300). Offset by higher expense due to the credit for A&G (“Admin and General Expenses”) charged to capital projects was less than planned, \$67,500.
- **Other Income** down \$919,000
Budget assumed \$750,000 of ARPA and customer contributions for Shelburne Road roundabout relocation, \$123,000 and UVM LCOM, \$29,000.

FINANCIAL HIGHLIGHTS – BUDGET VS ACTUAL as of August FY22

Capital Spending – August YTD (\$000s)				
Plant Type	Full Yr. Budget	Budget	Actual	% Spent
Production	\$1,017	\$218	\$59	6%
Other	192	38	0	0%
Transmission	1,150	0	0	0%
Distribution	3,577	401	319	9%
General	2,034	317	108	5%
Total	\$7,970	\$975	\$486	6%

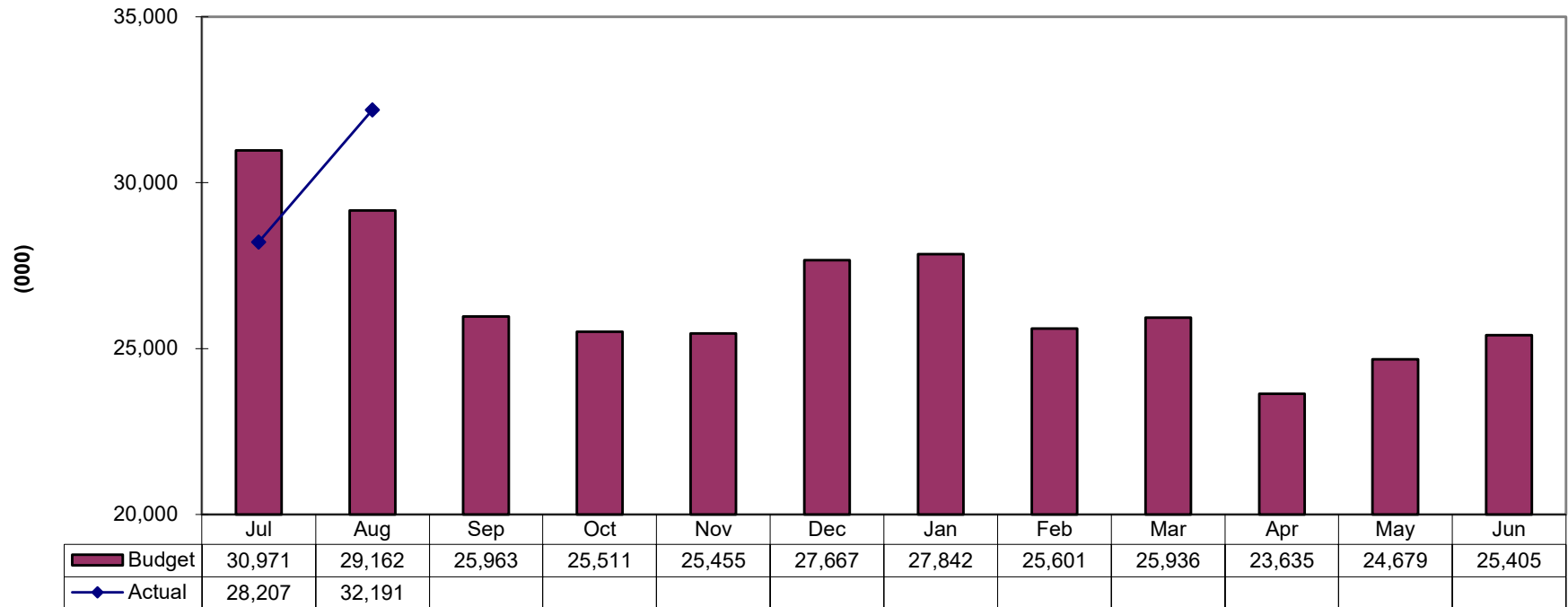
- (1) **Production** – Timing of projects at McNeil, \$75,000 and the Gas Turbine, \$77,200. Budget assumed outstanding A Jet items in July.
- (2) **Other** – Timing; budget includes Level 2 & 3 chargers, Packetized Energy, and research & development.
- (3) **Distribution** – Timing of various projects.
- (4) **General** – IT Forward project was budgeted throughout the year; YTD expenses of \$98,500 compared to a budget of \$204,900. Pole mount routers YTD expenses of \$5,300 vs budget of \$33,800. Electric Bucket Truck replacement was budgeted throughout the year, delivery has been delayed until July 2022.

As of August 31, 2021 Cash and Investments	
Operating Funds	\$7,086,400
Operating Fund – CDs	\$659,900
Total Operating Fund	\$7,746,300

Credit Rating Factors				
	"A"	"Baa"	Current	3 Year Average
Debt Service Coverage Ratio	1.25	1.25	4.07	3.77
Adjusted Debt Service Coverage Ratio	1.50	1.10	1.01	0.94
Cash Coverage - Days Cash on Hand	90	30	125	127

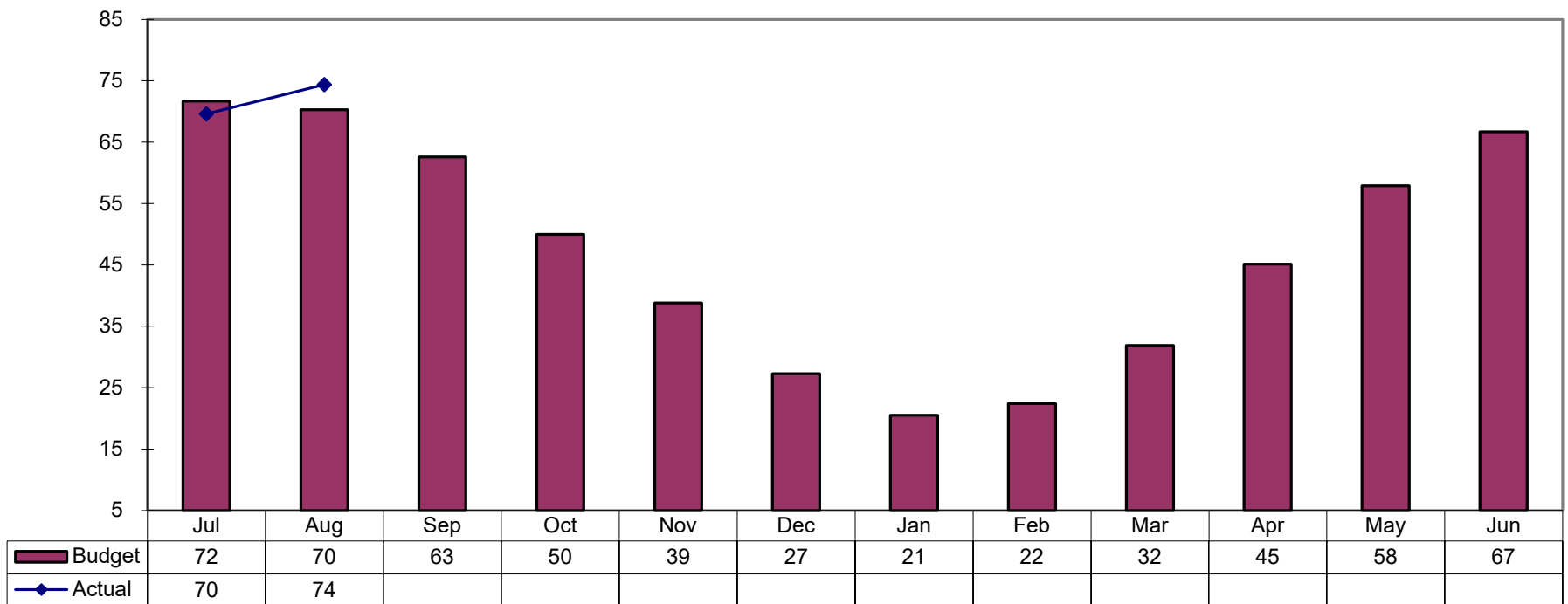
**Burlington Electric Department
Fiscal Year Ending June 30, 2022**

**Total Sales to Customers - KWH
Monthly**



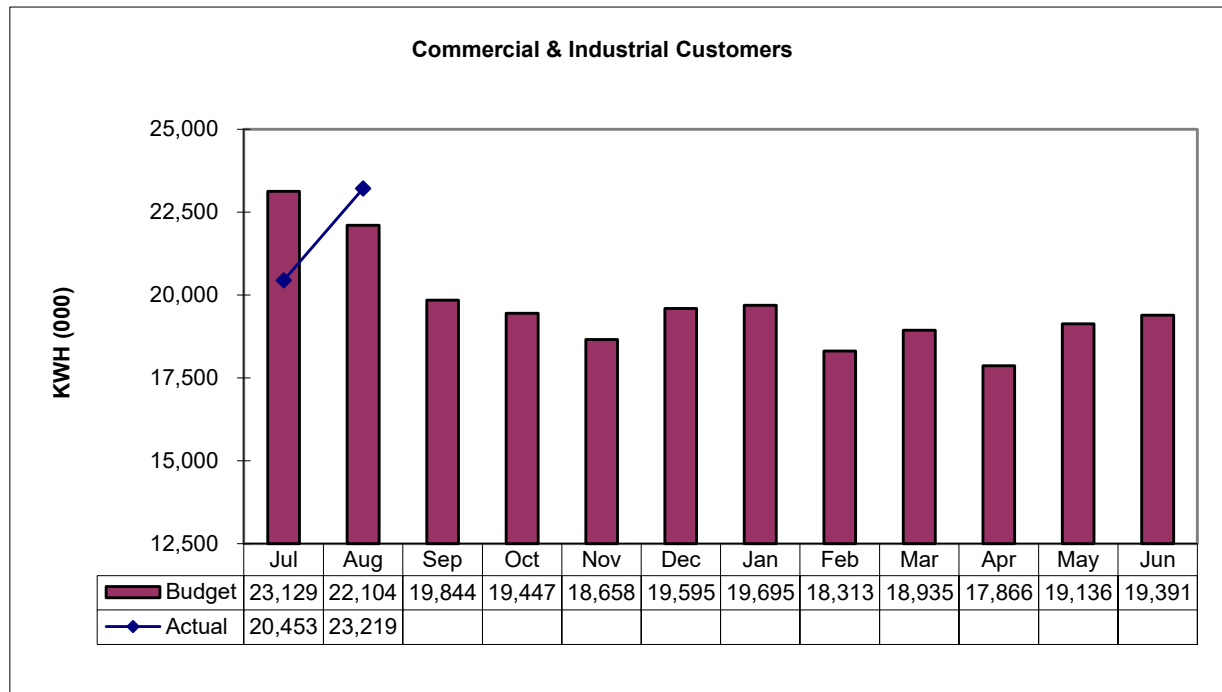
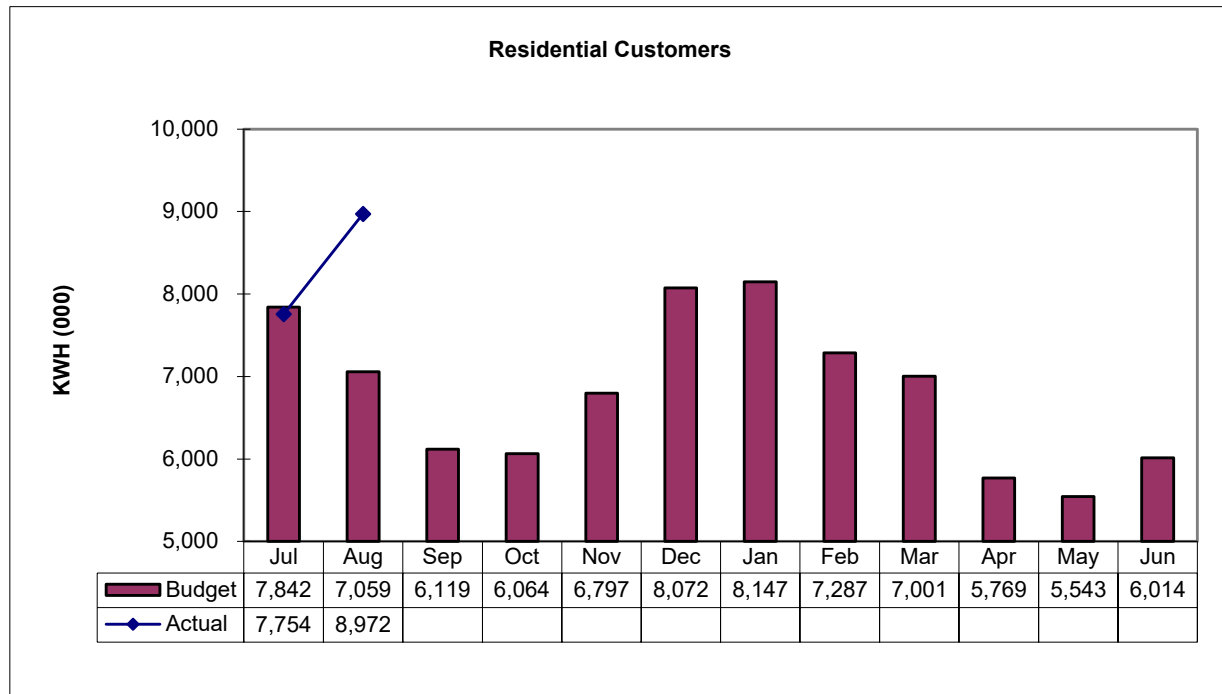
KWH Sales to Customers (YTD)												
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Budget	30,971	60,134	86,097	111,608	137,063	164,730	192,571	218,172	244,108	267,743	292,422	317,827
Actual	28,207	60,398										

**Burlington Electric Department
Fiscal Year Ending June 30, 2022
Average Monthly Temperatures - Burlington**



Information is recorded by the National Weather Service at the Burlington International Airport. Average temperatures are calculated using the min and max temperature for each day, over a 20 year period.

**Burlington Electric Department
Fiscal Year Ending June 30, 2022
KWH Sales**



Street Lighting is included with Commercial & Industrial Customers.

Net Power Supply Costs **August - FY 2022**

	(\$000)						
	Current Month				Year-to-Date		
	Budget	Actual	Variance		Budget	Actual	Variance
Expenses:							
Fuel (p. 7)	\$728	\$907	(\$179)	(1)	\$1,474	\$1,691	(\$217) (1)
Purchased Power (p.11)	1,223	1,214	10	(2)	2,425	2,282	142 (2)
Transmission Fees - ISO	647	620	28	(3)	1,169	1,322	(154) (3)
Transmission Fees - Velco	3	(52)	55	(4)	88	(164)	252 (4)
Transmission Fees - Other	49	44	5		103	84	19 (5)
Total Expenses	2,650	2,732	(82)		5,258	5,215	43
Revenues:							
Renewable Energy Certificates - McNeil	1,453	1,605	152		1,453	1,605	152
Renewable Energy Certificates - Wind	821	823	2		821	823	2
Renewable Energy Certificates - Hydro	149	135	(14)		149	135	(14)
Renewable Energy Certificates - Other	35	0	(35)		35	0	(35)
Total Revenues	2,458	2,563	105		2,458	2,563	105 (6)
Net Power Supply Costs	\$193	\$169	\$23		\$2,801	\$2,652	\$148
Load (MWh)	29,581	33,147	3,565		61,108	62,428	1,320
\$/MWh	\$6.51	\$5.11	(\$1.40)		\$45.83	\$42.49	(\$3.34)

Current Month:

(1) See detail on page 7.

(2) See detail on page 11.

(3) ISO-NE Transmission under Budget due to lower load at Vermont peak.

(4) VELCO Transmission under Budget due to VELCO receiving higher than projected ISO-NE transmission revenues.

YTD:

(1) See detail on page 7.

(2) See detail on page 11.

(3) ISO-NE Transmission over Budget due to higher ISO-NE Transmission rates.

(4) VELCO Transmission under Budget due to VELCO receiving higher than projected ISO-NE transmission revenues.

(5) NYPA VELCO Transmission under Budget.

(6) RECs expected to come in 1% below for Fiscal Year due to under Budget Wind and Hydro Production

**Net Power Supply Costs
August - FY 2022**

	(\$000)						
	Current Month				Year-to-Date		
	Budget	Actual	Variance		Budget	Actual	Variance
<u>FUEL:</u>							
McNeil:							
Fuel Consumed	505	614	(109)	(1)	1,010	1,167	(157) (1)
Swanton Yard	44	74	(29)	(1)	89	139	(50) (1)
Train Deliveries	90	103	(14)	(1)	179	192	(13) (1)
Labor & Other Expenses	75	79	(4)	(2)	171	132	39 (2)
Total McNeil Fuel	714	870	(156)		1,448	1,630	(182)
Gas Turbine	14	37	(23)	(3)	25	61	(36) (3)
Total Fuel	728	907	(179)		1,474	1,691	(217)

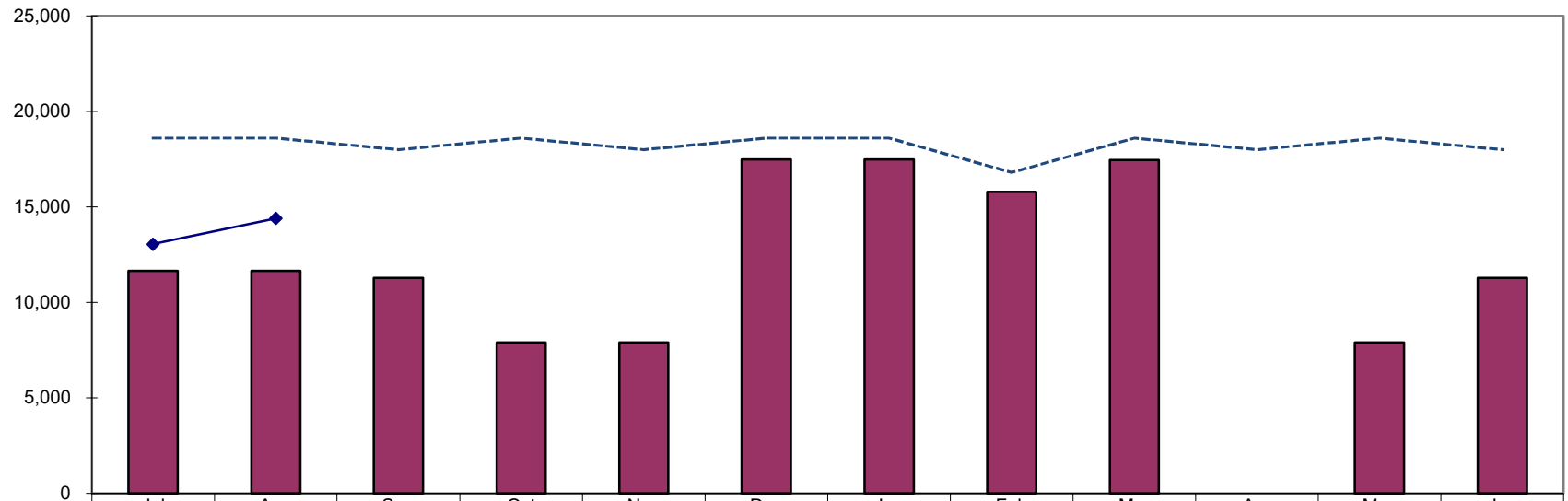
Current Month:

- (1) McNeil produced 14,396 MWh (24% over Budget); Woodchip costs (per ton) were 3% under Budget. (p. 9)
- (2) Actual labor is based on tonnage consumed by McNeil; budgeted labor is based on personnel/days in the month, thus timing issues for comparative purposes.
- (3) GT produced 118 MWh (157% over Budget).

YTD:

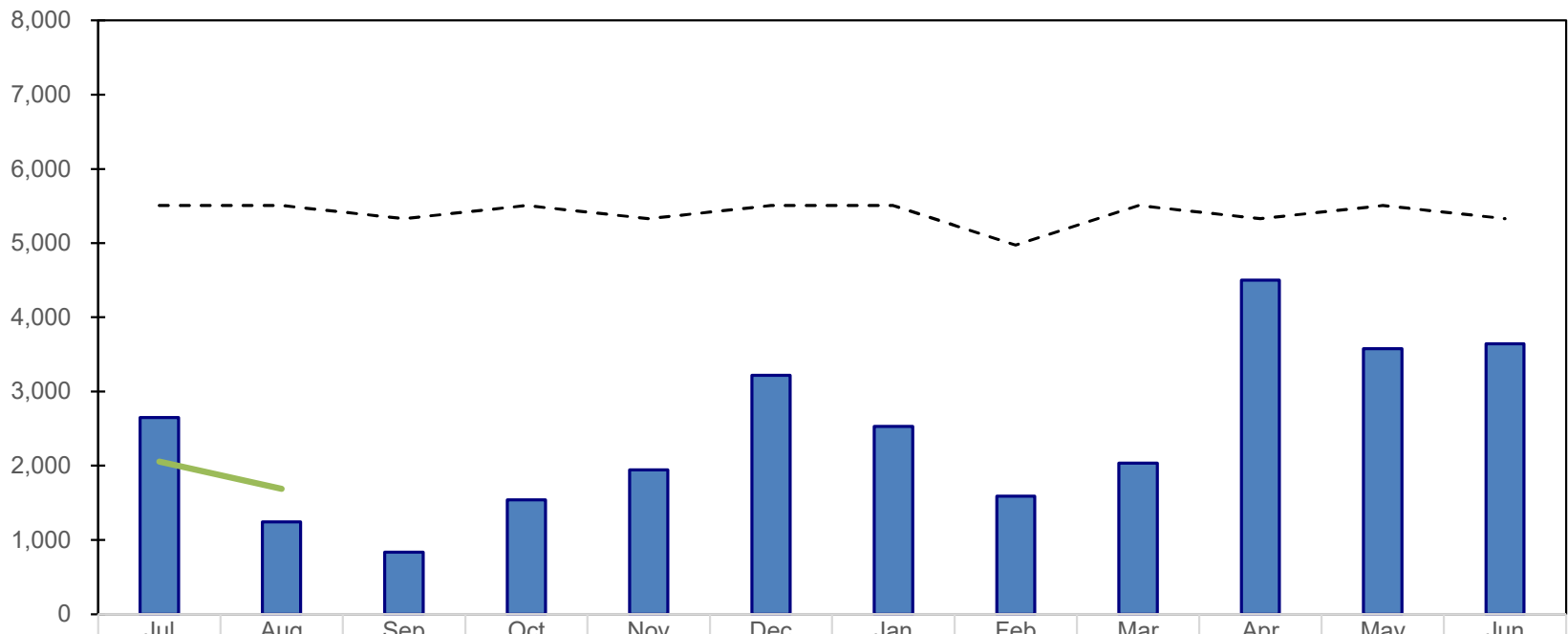
- (1) McNeil production was 18% over Budget; Woodchip costs (per ton) were 3% under Budget. (p. 9)
- (2) See Current Month.
- (3) GT produced 205 MWh (145% over Budget).

**Burlington Electric Department
McNeil Plant - MWH Production (50%)
FY 2022**



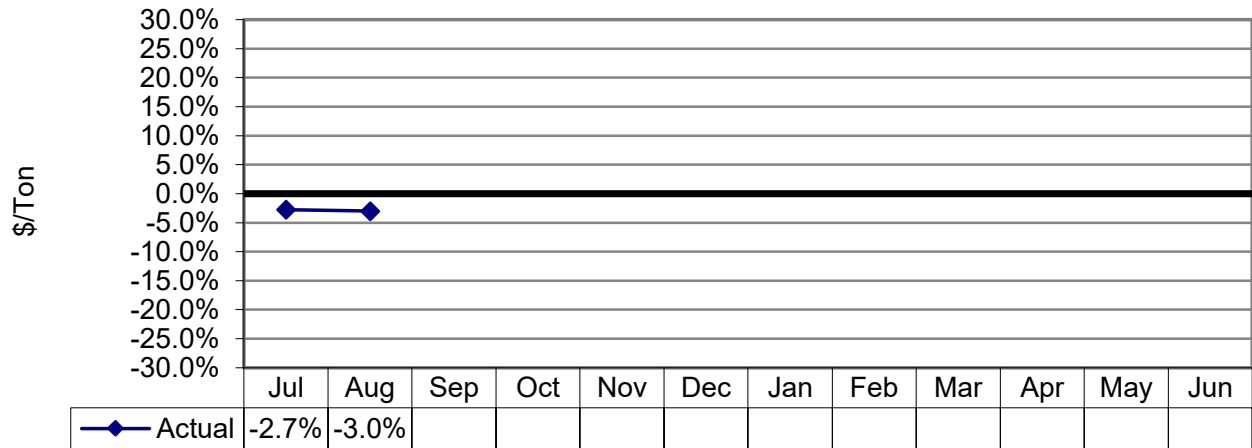
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Budget	11,656	11,656	11,280	7,896	7,896	17,484	17,484	15,792	17,461	0	7,896	11,280
Actual	13,047	14,396										
Maximum	18,600	18,600	18,000	18,600	18,000	18,600	18,600	16,800	18,600	18,000	18,600	18,000

**Burlington Electric Department
Winooski One - MWH Production
FY 2022**

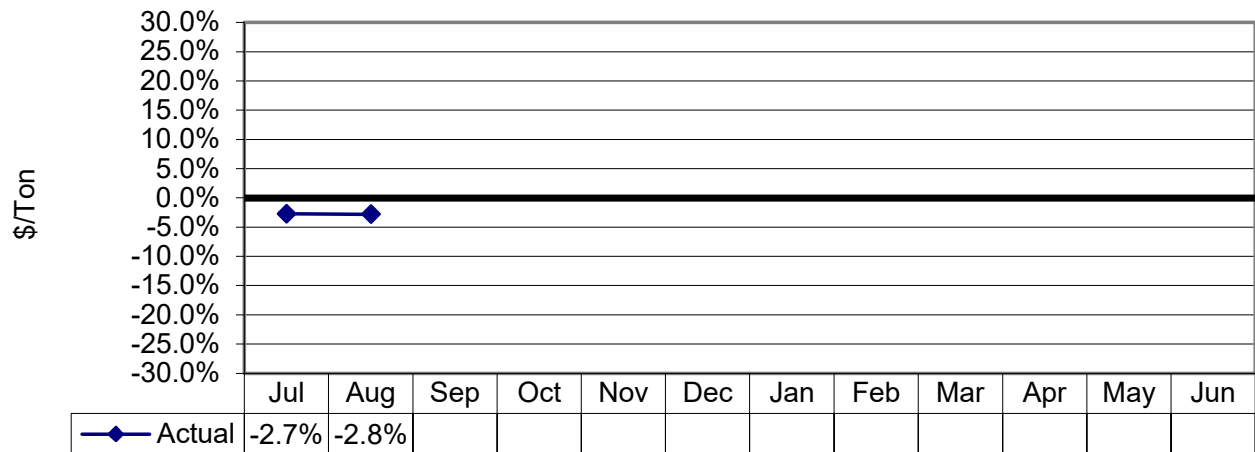


Burlington Electric Department Fiscal Year 2022

Woodchips Price Per Ton Monthly Variance



Woodchips Price Per Ton Year-to-Date Variance



* Wood only. Does not include other costs.

Net Power Supply Costs
August - FY 2022

	(\$000)							
	Current Month				Year-to-Date			
	Budget	Actual	Variance		Budget	Actual	Variance	
<u>PURCHASED POWER:</u>								
Non-Energy (capacity)	128	148	(20)		256	296	(40)	
Energy:								
Georgia Mountain Wind	213	165	47	(1)	437	279	158	(1)
Hancock Wind	172	82	90	(2)	336	215	121	(2)
VT Wind	139	109	30	(3)	270	218	53	(3)
Hydro Quebec	226	226	0		452	452	0	
Great River Hydro	169	169	0		338	338	0	
In City Solar Generators	100	102	(1)		215	192	23	
NYPA	6	9	(2)		13	18	(5)	
ISO Exchange	(12)	174	(186)	(4)	(18)	185	(202)	(4)
Velco Exchange	0	(1)	1		0	(1)	1	
Total Energy	1,014	1,036	(21)		2,044	1,895	148	
Ancillary Charges	11	(18)	29		8	(29)	37	
Miscellaneous	70	48	22		117	120	(3)	
Total Purchased Power Expense	1,223	1,214	10		2,425	2,282	142	

Current Month:

(1) Production 22% under Budget (one turbine out until Fall). Lower CY21 production will result in lower REC revenues later in FY22.

(2) Production 52% under Budget. Rate 1% under Budget due to Financial Adjustment. Lower CY21 production will result in lower REC revenues later in FY22

(3) Production 22% under Budget. Lower CY21 production will result in lower REC revenues later in FY22.

(4) Production above Budget: McNeil (24%), Winooski One (35%).

YTD:

(1) Production 36% under Budget (one turbine out until Fall). Lower CY21 production will result in lower REC revenues in FY22.

(2) Production 34% under Budget. Rate 3% under Budget due to Financial Adjustment. Lower CY21 production will result in lower REC revenues later in FY22.

(3) Production 20% under Budget. Lower CY21 production will result in lower REC revenues in FY22.

(4) McNeil Production 18% above Budget.

Burlington Electric Department
Operating and Maintenance Expense by Spending Category
FY 2022 -August YTD

Description	Budget	Actual	Variance	% Variance	*
Labor-Regular	1,327,851	1,370,588	(42,737)	3%	
Labor-Overtime	81,938	80,856	1,082	1%	
Labor-Temporary	4,500	0	4,500	100%	a
Labor-Overhead	506,955	550,519	(43,564)	9%	b
Outside Services	505,665	178,760	326,905	65%	c
DSM (rebates & outside services)	358,325	296,347	61,978	17%	d
Materials & Supplies	167,983	116,133	51,850	31%	e
Insurance	117,952	105,402	12,550	11%	
A & G Clearing	(105,000)	(37,458)	(67,542)	64%	f
Other - RPS Compliance	118,978	220,232	(101,254)	85%	
Other	550,058	286,043	264,015	48%	g
Operating and Maintenance Expense	3,635,204	3,167,422	467,782	13%	

(a) Policy & Planning assumed intern positions in July.

(b) See page 13.

(c) Timing of various items; Triennial Consulting Engineer's Report, \$34,000, other items at GT & W1, \$45,600, annual audit, \$88,800, assumed DPS billback expense due to rate case, \$67,000, General Services related equipment maintenance, \$17,000 and REC Broker commission fees, \$26,000

(d) Projects are driven almost entirely by customer decisions. The budget is based on information on specific projects or seasonal variations; otherwise the amount is spread evenly across the year.

(e) Timing; McNeil Plant (\$14,200), Distribution (\$19,300) Safety (\$7,100).

(f) The credit for A&G ("Admin and General Expenses") charged to Capital projects was less than planned.

(g) Timing: various areas are less than budget including; Transportation Clearing (\$27,900), Building Clearing, (\$24,000), Dues & Fees (\$17,500) and Uncollectible Accounts (\$19,300).

**Burlington Electric Department
Budget vs Actual Spending Analysis
FY 2022 - August YTD**

Labor - Overhead	(000's)				
	Budget	Actual	Variance	%	
Pension	\$253	\$248	\$5	2%	(a)
Medical Insurance	250	267	(17)	-7%	(b)
Social Security Taxes	157	148	9	6%	(a)
Workers Compensation Ins.	57	59	(2)	-3%	(b)
Dental Insurance	15	16	(0)	-1%	(b)
Life Insurance	4	3	0	11%	(b)
	\$737	\$741	(5)	-1%	

Rates Table:		Budget
<i>Pension</i>		13.11%
<i>Social Security</i>		7.65%

(a) Function of labor cost.

Pension amount for the year provided by the City during budget development.

(b) Budget provided by the City during budget development.

Net Income
FY 2022 - August (\$000)

	Ref	Current Month			Year - To - Date		
		Budget	Actual	Variance	Budget	Actual	Variance
Operating Revenues							
Sales to Customers	p.3	4,452	4,753	300	8,962	8,873	(89)
Other Revenues		300	250	(50) (a)	638	500	(139) (a)
Total Operating Revenues		4,752	5,003	251	9,600	9,373	(228)
Net Power Supply	p.6	193	169	24	2,801	2,652	149
Operating Expenses							
Operating and Maintenance	p.12	1,713	1,581	132	3,635	3,167	468
Depreciation & Amortization		501	493	7	1,001	1,022	(20)
Gain/Loss on Disp of Plant		143	130	13	143	130	13
Revenue Taxes		60	48	12	108	91	17
Property Taxes Winooski One		42	41	1	84	82	2
Payment In Lieu of Taxes		239	194	46 (b)	478	373	105 (b)
Total Operating Expenses		2,698	2,487	211	5,450	4,866	584
Other Income and Deductions							
Interest/Investment Income		4	5	1	9	10	1
Dividends		360	360	0	720	721	1
Customer Contributions/Grants		122	3	(118) (c)	902	3	(899) (c)
Other		(3)	(2)	1	16	(5)	(21)
Total Other Income & Deductions		483	367	(116)	1,648	729	(919)
Interest Expense		197	196	1	394	392	2
Net Income		2,148	2,518	370	2,604	2,193	(411)

Current Month:

- (a) Energy Efficiency Program cost reimbursement was less than planned, \$38,200.
(b) Actual includes city reappraisal.
(c) Budget assumed customer contributions for Shelburne Road roundabout relocation, \$93,000 and UVM LCOM project, \$29,000.
Actual includes other billable.

Year - To - Date:

- (a) Energy Efficiency Program cost reimbursement was less than planned, \$118,700.
(b) See current month.
(c) Budget assumed \$750,000 of ARPA funds in July and customer contributions for Shelburne Road roundabout relocation, \$123K and UVM LCOM project, \$29,000.. Actual includes other billable project.

**Burlington Electric Department
Capital Projects - FY22**

	\$000			
	Full Year Budget	Budget	August Actual	Variance
McNeil (BED 50% Share)				
ESP Mechanical Field Rebuild	225			0
Routine Station Improvements	107	21	0	21
Backup Boiler Feed Pump/Insurance	103	93	55	38
Turbine Control System Upgrade/Insurance	37			0
Augers Replaced	30			0
Elevator Geared Equipment & Controls	25			0
Turbine Extraction Valve Actuators	20			0
Belt Fire Suppression/Insurance	17			0
Cooling Tower Fill Drift Eliminators	15			0
Disc Screen	15			0
Chemical Feed Pump Replacement/Upgrade	15			0
ESP Wire Replacement	13			0
Safety Valve Replacements	12			0
GSU Transformer	11	6		6
Analyzer Upgrades for Chemical Treatment	9			0
Char Ash Conveyor	10	10		10
Station Tools & Tool Boxes	7			0
DC Lube Oil Pump Contractor Upgrade/Insurance			2	(2)
Other	24	3		3 (a)
Total McNeil Plant	697	133	57	76
 <i>(a) Budget includes energy efficiency improvements, farmhouse repair, probe ladder, perimeter fence upgrade, radio upgrades, rigging equipment and office equipment.</i>				
Hydro Production	221	8	1	7
Gas Turbine	98	77	0	77
Total Production Plant	1,017	218	58	160
Other				
Direct Current Fast Charger (Level 3)	85	17		17
Packetized Energy	52	10		10
Public Level 2 EV Charge	33	7		7
Policy & Planning Research & Dev	21	4		4
Total Other	192	38	0	38
Transmission Plant				
VT Transco Investment	1,150			0
Total Transmission Plant	1,150	0	0	0

**Burlington Electric Department
Capital Projects - FY22**

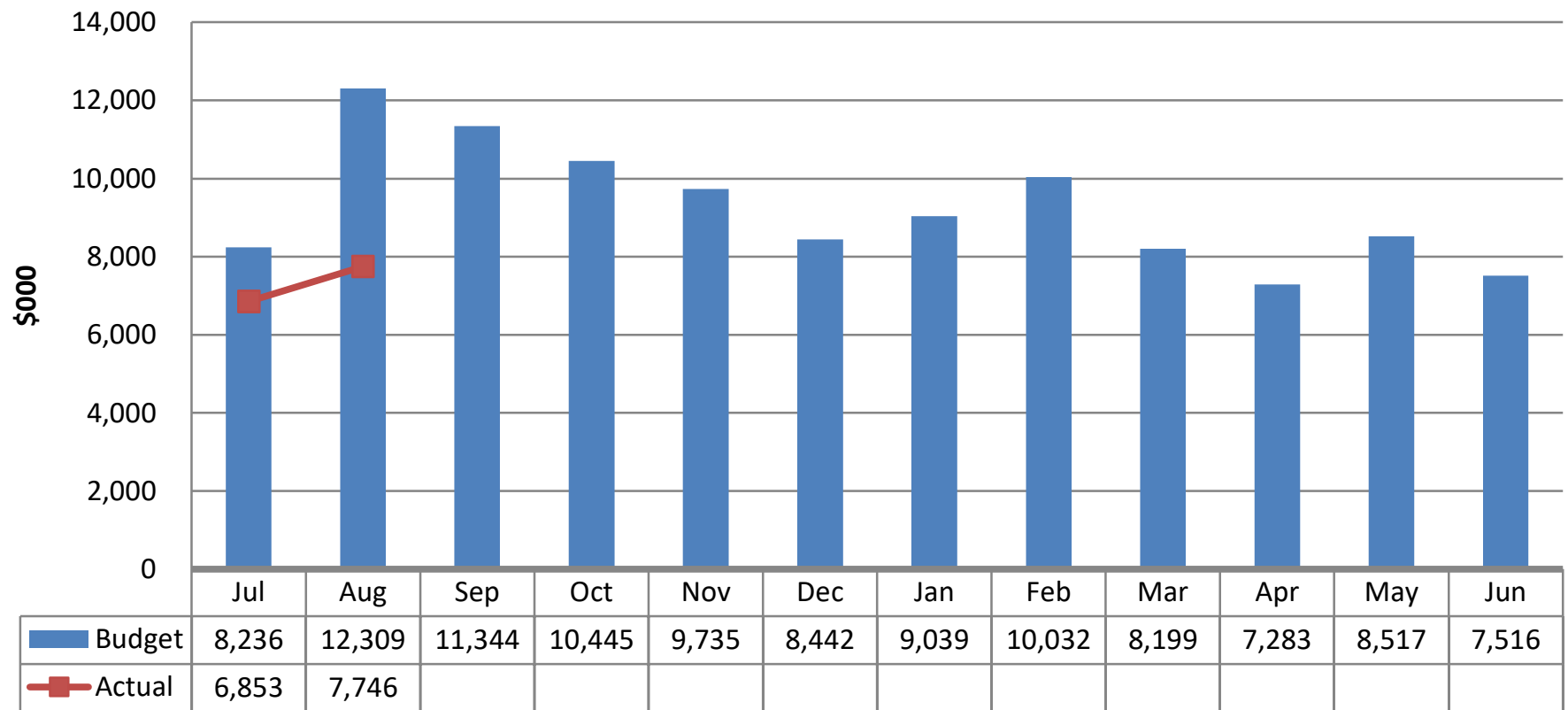
	\$000			
	Full Year Budget	Budget	August Actual	Variance
Distribution Plant-General				
Aerial				
Scarff Avenue Rebuild	701	35	5	30
Appletree Point Rebuild	258	52	3	48
1L4 P3149 to P3169 Reconductor	162		2	(2)
1L4 P3132 to P3149 Reconductor	140		22	(22)
Replace Condemned Poles	118		0	(0)
Replace Recloser 252R	48			0
227S Automation	47	47		47
Ferguson Ave, Wells St			2	(2)
Rebuild 3L4 Long Spans			2	(2)
Rebuild 1L4 Long Spans PH2			8	(8)
Total Aerial	1,474	134	43	90
Underground				
Replace Switch (756,757,758,730-Battery/Pearl St)	204		2	(2)
Replace Switch (303,307,308,309-Main/S Prospect)	137		1	(1)
Replace UG Switch (821,401,727,349,233)			53	(53)
Replace UG Switch (731,736,760,761)			16	(16)
Total Underground	341	0	72	(72)
Customer Driven/City Projects				
Champlain Parkway C6	644			0
Champlain Parkway C6 (CAFC)	(608)			0
UVM LCOM Project (Larner College of Medicine)	391	98	5	93
UVM LCOM Project (CAFC)	(116)	(29)		(29)
UVM Athletic Facility	101	40	15	26
Shelburne St Roundabout Relocation	630	126	1	125
Shelburne St Roundabout Relocation (CAFC)	(617)	(123)		(123)
Total Underground	425	112	21	91
Other				
SCADA Networking Upgrade/Firewall Replacement	296	30		30
Distribution Transformers-Purchase	190	10	101	(92)
SCADA Network Switches Replacement	98			0
Field Device Network Upgrades	67			0
Communication Equipment Emergency Repair	27			0
Distribution Transformers-Install	4	0	0	0
SCADA Servers Virtualization	0		6	(6)
Replace Overloaded Transformers	0		1	(1)
Other			2	(2)
Total Other	682	40	110	(71)
Total Distribution Plant-General	2,922	285	246	39

**Burlington Electric Department
Capital Projects - FY22**

	\$000			
	Full Year Budget	Budget	August Actual	Variance
Distribution Plant - Blanket				
Lighting	159	3	43	(39)
Lighting (Rebate)	(6)	(0)		(0)
Underground	194	43	13	30
Aerial	106	18	22	(5)
Meters	125	40	(4)	44
Gas Detectors	4			0
Tools & Equipment - Distribution/Technicians	30	5	1	4
Substation Maintenance	16			0
Replace Corroded Vista CT's/PT's	20		0	(0)
Substation-Temperature Alarms	8	8		8
Total Distribution Plant - Blanket	655	116	74	42
 Total Distribution Plant	 3,577	 401	 320	 81
General Plant				
Computer Equipment/Software	1,806	263	104	159 (a)
Vehicle Replacement	165	17		17 (b)
Buildings & Grounds	55	33	5	28 (c)
Other	8	5	0	5 (d)
Total General Plant	2,034	317	108	209
 <i>(a) Budget includes IT Forward, \$204,900, OpenWay upgrade, \$24,600 and Pole Mount Routers, \$33,800. Actual includes IT Forward, \$98,500 and Pole Mount Routers, \$5,300.</i>				
<i>(b) Budget assumed new electric bucket truck with a large portion covered by a grant. Periodic payments were assumed in July, January, March and May. Delivery has been delayed until July 2022.</i>				
<i>(c) Budget includes fence for solar array, \$19,000, security camera replacements, \$5,000, sign replacements, \$5,000 and ID printer, \$4,000. Actual includes ID printer replacement.</i>				
<i>(d) Budget includes AED purchase for Pine Street.</i>				
 Sub-Total Plant	 \$7,970	 \$975	 \$487	 \$489
 Add: CAFC* reclass to "Other Income"	 1,346	 152	 3	 149
 Total Plant	 \$9,316	 \$1,128	 \$490	 \$638

* Customer Advances (Contributions) for Construction.

Operating Cash - FY 2022 Monthly Ending Balance



NEOTHERMAL ENERGY STORAGE INC. AND BURLINGTON ELECTRIC DEPARTMENT PROJECT AGREEMENT

This Agreement is made to be effective the _____ day of September 2021 (“Effective Date”), by and between Neothermal Energy Storage Inc. (“Neothermal”), a Canadian extraprovincial corporation, (the “Awardee”), and the City of Burlington, Vermont Electric Department (“BED”).

RECITALS

A. Background: As a component of the 2021 DeltaClimaVT program, BED selected the Awardee to deliver a building energy simulation study of typical VT Burlington homes heated with natural gas demonstrating the potential for fuel shifting using Neothermal ETS, followed by an in-home pilot demonstration of a Neothermal ETS situated in BED's service territory. Neothermal ETS is the Awardee's innovative GHG emission-reducing, supplemental electric thermal storage (ETS) appliance for use with residential central heating systems. This pilot's objectives are to evaluate the anticipated and observed real-world impacts of fuel shifting using Neothermal ETS in BED territory (GHG emissions, wholesale net utility cost of energy, homeowner net cost of energy for heating, occupant comfort, and peak shifting), as well as to support the development of an ETS prescribed measure for Tier 3 compliance and potential amendments to the VT Residential Building Energy Standard (RBES).

B. The Awardee submitted a proposal detailing specifications for the project “Neothermal ETS Pilot Project for Vermont Utilities” (the “Project”).

C. Based on the review of the Awardee's proposal BED has awarded a paid pilot project to the Awardee pursuant to the terms contained in this Agreement for simulating and deploying a Neothermal ETS in BED territory. The objective of this pilot project is to evaluate whether a broader deployment of Neothermal ETS can create another net zero energy pathway for the City by utilizing off-peak electric energy for fuel shifting and supplementing with renewable natural gas as back up to Neothermal ETS.

COVENANTS

NOW THEREFORE, in consideration of the recitals, and for other good and valuable considerations, the parties agree as follows:

1. PROJECT EXECUTION.

1.1 The Awardee is responsible for executing the Project in accordance with the work plan set forth in **Exhibit A** and the terms and conditions of this Award Agreement.

1.2 Any payments received from BED as outlined in the project budget in **Exhibit B** shall be used exclusively for the purpose(s) of executing the Project and for no other purpose without the express,

written consent of BED. Any changes to the Project shall be preapproved by BED. Failure to receive approval for any proposed change to the Project may result in either a forfeiture of or reduced Award.

1.3 Execution of the Project shall be completed no later than by August 2024.

2. PAYMENT OF AWARD.

2.1 Awardee shall submit interim invoices for the project budget to BED, attn.: Accounts Payable, BEDAP@burlingtonelectric.com for approval and payment as shown in Exhibit B. Upon the latter of the execution of the Project Agreement by all parties and the submitted invoice, eligible project expenses will be paid to the Awardee in accordance with the Project budget schedule set for in Exhibit B.

2.2 The Project budget is set forth in Exhibit B.

4. PROJECT PROGRESS REPORTING. Awardee agrees to attend monthly, or more frequently if required, project status meetings with BED staff (attendance via Microsoft Teams or Zoom call is acceptable).

5. INSURANCE. Awardee carries general liability insurance in the amount of \$1,000,000. The equipment supplied by the Awardee and the work performed by the Awardee for the Project shall be covered by the Awardee's general liability insurance. BED requests proof of General Liability, Workers' Compensation (if applicable) and Automobile insurance (Phase 2 of the work plan only) prior to the commencement of work. Awardee's use of personal or company vehicles is not included within the scope of this Project.

6. INDEMNITY. Awardee hereby indemnifies, defends and holds BED harmless from and against any claims or demands made by others arising from or out of or in any manner connected with this Agreement, except to the extent arising from the indemnified Party's own gross negligence or willful misconduct.

7. GRANTOR/AWARDEE RELATIONSHIP. Awardee shall not be deemed to be nor shall Awardee represent itself as a contractor, employee, partner or joint venturer with or of BED. No employee or officer of BED shall supervise Awardee. Awardee is not entitled to workers' compensation benefits through BED and is obligated to directly pay federal and state income tax on compensation received from the Project, if applicable.

8. TERMINATION. BED reserves the right to terminate the Project in whole or in part if Awardee materially breaches this Agreement and fails to cure the breach within thirty (30) days after receipt of written or email notice of such breach from BED.

9. NO ASSIGNMENT. Neither party shall assign, sublet, or transfer any interest in this Award Agreement without the written consent of the other.

10. AMENDMENT. No amendment or modification shall be made to this Agreement unless it is in writing and signed by both parties.

11. GOVERNING LAW. This Agreement is governed by the laws of the State of Vermont.

[Signature Page Follows]

DRAFT

AWARDEE: NEOTHERMAL ENERGY STORAGE INC.

By: Louis Desgrosseilliers

Title: CEO

CITY OF BURLINGTON, VERMONT ELECTRIC DEPARTMENT

General Manager

DRAFT

Exhibit A – Project Work Plan

Project Scope and Objectives

This project, in partnership with Vermont Gas Systems (VGS), will evaluate the feasibility of using Neothermal ETS in one Burlington single family home coupled with either a Time-of-Use (TOU) electric rate, an alternate electric Demand Response (DR) program, or electric customer bill credits to enable significant fuel shifting from natural gas to low-carbon/carbon-free electricity. This will be accomplished in two phases: Building Energy Simulations (Phase 1), and In-home Pilot Demonstration (Phase 2).

The Building Energy Simulation phase will be used to study the anticipated impacts on fuel shifting, greenhouse gas (GHG) emissions, and homeowner cost of energy for each representative home simulation model with respect to climate, housing characteristics, ETS system sizing, and utility Demand Response (DR) programs/protocols (together; referred to as the “Success Criteria”. For the latter, Phase 1 will include an evaluation of only one DR strategy (either TOU or other DR protocol/bill credits), with 3 mutually selected, single family housing archetypes included. Desires by BED to explore other DR strategies or additional single family housing archetypes will be included on receipt of a change-order and payment of \$2,000 per change-order.

Following Phase 1, BED, VGS and Neothermal will seek to recruit a Burlington building owner to participate in an In-Home Pilot Demonstration. The ideal candidate will own a single family home that matches closely the assumptions used in estimating the Success Criteria identified in Phase 1, noted above. Additional In-Home Pilot Demonstrations may be accommodated at the request of BED and/or VGS on receipt and approval of a change-order.

For deployment in the city of Burlington, a hybrid heating system using Neothermal ETS and renewable natural gas (RNG) as back-up is anticipated to represent an attractive option to explore demonstration of net-zero carbon strategies.

Project objectives include the following: a) to evaluate the effectiveness of fuel shifting using Neothermal ETS in typical VT homes; (b) design and evaluate the impacts of TOU/DR/bill credit programs on fuel shifting, utility operations and homeowner net cost of energy for heating; (c) evaluate occupant satisfaction using Neothermal ETS in a hybrid home heating system; (d) establish the basis for regulatory filings in VT for Tier III prescribed measures; and (e) potentially to propose amendments to the Residential Building Energy Standard (RBES).

1. Ideal VT Pilot Home Criteria

Ideal pilot candidates would be single family homes (detached, semi-detached, or row-houses) smaller than approx. 2,000 sq ft that are heated with either fuel-fired furnaces or boilers. For boiler homes, Neothermal ETS can work with baseboard convectors, cast iron or steel radiators, or in-floor radiant heating that is installed in wood frame flooring. Heated concrete flooring would not be ideal, as it already acts as its own thermal storage. Neothermal ETS can work with homes as big as 3,000 sq ft, but these will likely require more ETS modules and as a result run a risk of needing an electrical service upgrade to 200

amps. The ideal home should have the capacity to add one 30 amp breaker to their electrical panel without needing a service upgrade (minimum service entrance of 100 amps is required).

Regardless of the size of the candidate homes, their annual heating loads should ideally be in the range of 10,000 kWh to 20,000 kWh/y (heating requirement only, not adjusted to AFUE of heating system). For example, annual fuel consumption could range from 310-620 gal/y for 80% AFUE oil heat; 400-790 gal/y for 95% AFUE propane heat, and 36-72 MMBtu/y for 95% AFUE natural gas. The highest energy cost savings would be for those with propane heat, then oil, then 100% RNG.

It is estimated that Neothermal ETS in an average home using exclusively off-peak electricity (i.e. 8 h overnight off-peak weekdays, 24 h off-peak weekends/holidays) consumes approx. 10,000-12,000 kWh/y with AFUE ranging from 90-95%. This would displace 280-350 gal/y of fuel oil (80% AFUE), 360-450 gal/y of propane (95% AFUE), or 32-41 MMBtu/y of natural gas (95% AFUE). When utilizing a 12pm-4pm mid peak top-up charge, our ETS consumes 12,000-14,000 kWh/y (2,000 kWh/y at mid peak, the rest at off-peak) to displace 340-410 gal/y of fuel oil, 430-530 gal/y of propane, or 39-48 MMBtu/y of natural gas.

Timeline	Key Tasks and Milestones	Responsible party
Oct – Nov. 2021	<ul style="list-style-type: none"> Solicit additional VT utilities to sponsor additional In-home Pilot Demonstrations Develop research collaboration funding proposal with Lawrence Berkley National Lab (LBNL) in support of the Project 	NT
Phase 1 – September 2021- April 2022	<ul style="list-style-type: none"> Gather representative VT housing information (e.g., home energy assessment reports, housing stock surveys) Define three VT home archetypes Define baseline DR strategies 	NT/BED VGS
	<ul style="list-style-type: none"> Build and validate archetypal housing models in TRNSYS Simulate ETS operation in home archetypes Perform additional cases as defined by new scope items Generate Phase 1 report 	NT
Phase 2 – May 2022- August 2024	<ul style="list-style-type: none"> Identify suitable homes in Burlington and recruit homeowner participant(s) 	BED/VGS
	<ul style="list-style-type: none"> Finalize ETS system sizing and selection for selected VT home(s) Design of experiments (with BED/VGS oversight & approval) Finalize ETS equipment order(s) (with BED/VGS oversight & approval) Manufacture ETS system(s) 	NT/VGS BED

	<ul style="list-style-type: none"> • Deliver/install/commission ETS units in selected VT homes (installed by VGS) • Install monitoring equipment in homes and commission data logging to server • Evaluate ETS performance, operating per DR strategy selected over a contract period. • Generate Final project report 	
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Major Deliverables to BED/VGS

1. Building energy simulation study report representing the performance outcomes of Neothermal ETS in 3 VT home archetypes.
2. 1x Neothermal ETS 32 kWh capacity system (ETS modules, appliance panel, heat exchanger, valves and process switches) for deployment in BED territory into a centrally heated (hydronic or forced air) residential customer site currently heated using natural gas.
3. Monthly progress updates documenting the progress against all tasks. These updates will be provided either in writing or during the monthly check-in meetings.
4. Final In-Home Pilot Demonstration summary that includes hourly kWh consumed by Neothermal ETS located at the customer site during defined off-peak and on-peak periods, by month, natural gas consumption due to space heating at the customer site (both historic and coinciding with the project), lessons learned and suggested next steps.

Project Overview

Phase 1: Building Energy Simulations

Neothermal has modelling capabilities to represent our Neothermal ETS system in home energy simulations using commercial software called TRNSYS. This capability was developed in partnership with Natural Resources Canada (NRCan) under their CanmetENERGY Ottawa division, and based on our lab and field evaluations and fundamental knowledge of the underlying chemistry and fluid/heat/thermodynamic processes. This modelling capability was developed with assistance from Dr. Ian Beausoleil-Morrison at Carleton University in Ottawa, who is an internationally recognized leader in the field of building energy simulations. Our utility partners would also provide their system-based views of the impacts of the technology on the utilities' operations and for VT ratepayers.

The simulations would determine how Neothermal ETS works in a typical Burlington home. Simulations would examine our system in a minimum of 3 types of typical VT homes and Neothermal could alter the characteristics of each home as needed. Neothermal would input home size, construction/envelope metrics, type of heating system and zones. Alongside the home information, Neothermal would input publicly available Burlington climate data (typical/extreme meteorological years).

At the request of the project partners (by change-order), Neothermal could further customize the building energy simulations. Ultimately, Neothermal will focus simulation outputs on home heating performance

and calculations of fuel-shifting, GHG reductions, energy consumption, energy efficiency and indoor comfort (based on temperature). Other inputs would include TOU scheduling, potential demand response periods, Burlington climatic conditions, and thermostat set points. The software can also represent our system in conjunction with rooftop solar (note this would constitute added scope and would require a change-order).

Phase 2: In-Home Pilot Demonstration(s)

For a physical pilot in Vermont, we anticipate Fall 2022 to be a reasonable timeline to install 1 Neothermal ETS unit (consisting of 4 connected modules) for a project. They would be built and safety-tested (in accordance with a nationally recognized testing laboratory or “NRTL”) for sale in the US.¹ The unit(s) would be delivered to Burlington by Neothermal and installed/commissioned by local tradespeople (e.g., VGS HVAC installers) with assistance from Neothermal. The Utility Sponsors would be responsible for identifying and recruiting a suitable participant(s) to host Neothermal ETS equipment for operation in their home(s) for a period of 1-2 years (Site Host(s)).

Prior to commencing Phase 2, Utility Sponsors will establish terms and conditions of an ETS equipment ownership agreement providing for the transfer of ownership from the utility sponsors to the site host(s) or, in the alternative, removal of such ETS equipment from the Site Host(s) premises and ultimate disposition of said ETS equipment.

Costs associated with sensors, measurement devices, data transmitters, and data server hosting specified by the Utility Sponsors with the exception of those included as part of the Neothermal ETS equipment will be an equally shared responsibility of the Utility Sponsors and any other relevant party (e.g., university or college partner, US DOE-LBNL), barring any later funding sources that are secured to support this project. Neothermal will provide data transmission and data server hosting services for the duration of Phase 2 of the Project exclusively in relation to the on-board sensors and internal operating states of Neothermal ETS equipment.

Costs (approximate) – all costs in US currency (USD)

Utility Sponsors

- BED, VGS, and each additional VT utility will jointly pay for the cost of the building energy simulation in Phase 1 of the Project and for ETS equipment supplied and delivered in Phase 2.
- BED, VGS, and each additional VT utility will jointly pay for the costs of additional site measurement equipment, data transmission and server hosting services in relation to Phase 2 that are not already included as part of the Neothermal ETS equipment.
 - Examples of site measurement equipment are end-use electricity use monitors such as e-gauges (<https://www.egauge.net>), temperature sensors and smart thermostats with or

¹ At the time of ETS product delivery, NT will provide BED a copy of the NRTL compliance report(s).

	without smart gateway device, HVAC temperature/flow sensors/switches, and end-use heating fuel supply gauges/meters.
Site Host(s)	Homeowner(s) is responsible for cost of ETS installation along with the costs of electricity consumed by the ETS and wired internet connection/Wi-Fi access.
In-Kind Partners (TBD)	E.g., Efficiency VT. Provide assistance and expertise with identification and characterization of VT home archetypes. May also provide site measurement equipment, data transmission, and server hosting.
Others (TBD)	E.g., LBNL. Collaborations with building energy simulations of VT home archetypes and field measurement and evaluation.

Phase 1 Budget	Neothermal	BED	VGS	Customer	Total Contributions	Total Cost
Building Energy Simulation*	-	\$ 5,000	\$ 5,000	-	\$ 10,000	\$ 10,000

Phase 2 Budget	Neothermal	BED	VGS	Customer	Total Contributions	#	Total Cost
ETS Equipment + Delivery	\$ 14,000**	\$ 5,000	\$ 5,000	-	\$ 24,000		\$ 24,000
Additional Travel	\$ 5,000**	-	-	-	\$ 5,000		\$ 5,000
ETS Installation, per module	-	-	-	\$ 1,000***	\$ 1,000		\$ 1,000
Phase 2 Contributions****	\$ 19,000**	\$ 5,000	\$ 5,000	\$ 1,000	\$ 30,000		\$ 30,000
Total Contributions	\$ 19,000**	\$ 10,000	\$ 10,000	\$ 1,000	\$ 40,000		\$ 40,000

* Add \$2,000 per change order

** Approximate contributions

*** Assumes no in-kind from VGS

**** Measurement and verification cost TBD and additional to listed pilot project budget

Exhibit B – Project Budget

Cash contributions from BED to Awardee paid out upon successful completion of Phase 1 and Phase 2,

- 1. Building Energy Simulations (Phase 1): \$5,000**
- 2. In-Home Pilot Demonstration (Phase 2, ETS equipment purchase, delivery, and commissioning): \$5,000**

DRAFT

ARC INDUSTRIES, INC. AND BURLINGTON ELECTRIC DEPARTMENT PROJECT AGREEMENT

This Agreement is made to be effective the _____ day of October, 2021 (“Effective Date”), by and between Advanced Renewable Concept Industries, Inc. (DBA ARC Industries, Inc.), a benefit corporation, (the "Awardee" or “ARC Industries”), and the City of Burlington, Vermont Electric Department (“BED”). The Awardee and BED may be referred to individually as a “Party” and collectively as the “Parties”.

RECITALS

A. Background: As a component of the 2021 DeltaClima VT program, BED selected the Awardee to deliver a 3 kilowatt (kW) wind turbine (the “Orb”) that will generate electricity on BED’s distribution system. This pilot’s objectives are to test the deployment of the Awardee’s innovative distributed energy wind resource in BED territory.

B. The Awardee submitted a proposal detailing specifications for the project “ARC Industries BED Pitch” (the “Project”).

C. Based on the review of the Awardee’s proposal BED has awarded a paid pilot project to the Awardee pursuant to the terms contained in this Agreement for deploying ARC Industries’ Orb in BED’s territory. This pilot project will lead to an improved understanding of the performance of distributed wind energy resources in Burlington, specifically the efficacy of the Awardee’s rooftop mounted small wind turbine.

D. The Project will begin with site planning, design and installation phases and will continue for one (1) year from the date which the Orb begins producing electricity (“Operation Date”). After which, the decommissioning phase will begin unless an End of Project Option is agreed upon by both Parties.

COVENANTS

NOW THEREFORE, in consideration of the recitals, and for other good and valuable considerations, the parties agree as follows:

1. PROJECT EXECUTION.

1.1 The Awardee is responsible for executing the Project in accordance with the work plan set forth in **Exhibit A** and the terms and conditions of this Project Agreement.

1.2 Any payments received from BED as outlined in the project budget in **Exhibit B** shall be used exclusively for the purpose(s) of executing the Project and for no other purpose without the express,

written consent of BED. Any changes to the Project shall be pre-approved by BED. Failure to receive approval for any proposed change to the Project may result in either a forfeiture of or reduced Award.

2. PAYMENT OF AWARD.

2.1 Awardee shall submit all invoices for the project budget to BED, attn.: Accounts Payable, BEDAP@burlingtonelectric.com for approval and payment as shown in Exhibit B. Awardee shall invoice BED for Items shown in Exhibit B and BED shall remit payment to Awardee for each Item within the Due Date specified by that Item.

2.2 The Project budget is set forth in Exhibit B.

3. DATA ACCESS. During the Project, Awardee may collect data including, but not limited to, energy usage, energy generation, wind speed, wind direction, video, and audio (audible and ultrasonic). All data collected during the Project will be owned jointly by Awardee and BED. Awardee will provide access to such data either directly through device application programming interfaces (APIs) where possible, or via monthly file sharing.

4. PROJECT PROGRESS REPORTING. Awardee agrees to attend monthly project status meetings with BED staff (attendance via a virtual meeting is acceptable).

5. INSURANCE. Awardee carries general liability insurance in the amount of \$2,000,000, with an occurrence limit of \$1,000,000. The work performed for the Project shall be covered by the Awardee's general liability insurance. BED may request proof of such insurance at BED's discretion. Awardee's use of personal or company vehicles is not included within the scope of this Project.

6. INDEMNITY, SAVE, AND HOLD HARMLESS. Awardee agrees to indemnify, save, and hold harmless BED from any and all damages, liabilities, costs, losses, or expenses arising out of any claim, demand, or action by a third party arising out of any acts or omissions of Awardee or Awardee's subcontractors. Under such circumstances, BED shall promptly notify Awardee in writing of any claim or suit; (a) Awardee has sole control of the defense and all related settlement negotiations; and (b) BED provides Awardee with commercially reasonable assistance, information and authority necessary to perform BED's obligations under this section. Awardee will reimburse the reasonable out-of-pocket expenses incurred by BED in providing such assistance. This section shall survive termination of this Agreement.

7. WILDLIFE IMPACT. Throughout the project, the Awardee will conduct wildlife impact studies to determine the effect the Orb may have. The Awardee will conduct a month-long monitoring period prior to deployment to determine the baseline wildlife impact followed by 12 months of monitoring from the Operation Date.

8. GRANTOR/AWARDEE RELATIONSHIP. Awardee shall not be deemed to be nor shall Awardee represent itself as a contractor, employee, partner or joint venturer with or of BED. No employee or officer of BED shall supervise Awardee. Awardee is not entitled to workers' compensation

benefits through BED and is obligated to directly pay federal and state income tax on compensation received from the Project, if applicable.

9. TERMINATION. Unless otherwise determined by BED through written notice, the Project will terminate upon reaching one (1) year from the Operation Date. BED reserves the right to terminate the Project in whole or in part due to Awardee's failure to fulfill the terms and conditions stated herein.

10. NO ASSIGNMENT. Neither party shall assign, sublet, or transfer any interest in this Award Agreement without the written consent of the other.

11. AMENDMENT. No amendment or modification shall be made to this Agreement unless it is in writing and signed by both parties.

12. END OF PROJECT OPTIONS.

12.1 DECOMMISSIONING. The Parties agree that decommissioning of the Project will begin thirty (30) days prior to the Termination Date. BED may elect for a Project Extension or Buy-Out Option by providing Awardee written notice (the "BED Decommissioning Notice") prior to the commencement of any decommissioning of the Project by the Awardee.

12.2 PROJECT EXTENSION. Upon mutual agreement of the Awardee and BED, the term of this Agreement may be extended by up to six months after the end of the designated project. Such an agreement must be executed prior to the start of decommissioning. Such extension may be made subject to the terms and conditions hereunder and to any other terms and conditions as BED may determine to be necessary or advisable. Under no circumstances shall such an extension by BED be interpreted or construed as a forfeiture by BED of any of its rights, entitlements or interest created hereunder. Awardee acknowledges and understands that BED is under no obligation whatsoever to extend the term of this Agreement beyond the initial term.

12.3 BUY-OUT OPTION. BED will have the right after the end of the designated project to buyout the Orb prior to the start of decommissioning.

13. TESTIMONIALS.

13.1 BED shall use commercially reasonable efforts to provide favorable, but accurate, testimonials for the Orb by ARC Industries, Inc. based on BED's usage of the Orb.

13.2 If BED authors a testimonial, comment, review, suggestion or any work of authorship (collectively a "Submission") such Submission will not be confidential or secret and may be used by us in any manner. By submitting or sending a Submission to us, you: (i) represent and warrant that the Submission is original to you, that no other party has any rights thereto, and that any "Moral Rights" in such Submission have been waived, and (ii) you grant us a royalty-free, unrestricted, worldwide, perpetual, irrevocable, non-exclusive and fully transferable, assignable and sublicensable right and license

to use, reproduce, publish, distribute, display, translate, summarize, modify and adapt such Submission (in whole or part) and/or to incorporate it in other works in any form, media, or technology now known or later developed, in our sole discretion, with or without your name, and (iii) you grant us the right to publish your name, city, state and country of residence in connection with the posting or use of the Submission, such as in promotions or other publications, whether online or otherwise, including but not limited to the website and its affiliates, Facebook, Google+, Instagram, Pinterest, Tumblr, Twitter, Vimeo and YouTube. In no event are we obligated to use, reproduce, or publish any Submission.

14. GOVERNING LAW. This Agreement is governed by the laws of the State of Vermont.

[Signature Page Follows]

DRAFT

AWARDEE: Advanced Renewable Concept Industries, Inc.

By: _____

Title: _____

CITY OF BURLINGTON, VERMONT ELECTRIC DEPARTMENT

General Manager

DRAFT

Exhibit A – Project Work Plan

Introduction

Description about ARC: At ARC Industries, we design and manufacture roof-top mounted vertical axis wind turbines for urban and suburban environments. Our product, the Orb, delivers clean renewable energy in a compact package, increasing our customers' climate resilience and reducing their dependence on fossil fuels. Our mission is to assist in the transition from fossil fuels to 100% renewable energy, empowering the people to take back their health and well being from the fossil fuel industry. As a registered benefit corporation, we take our impact on the environment to heart because we know that even a small action can have a big effect. We believe in the triple bottom line: people, planet, and profit, because changing the world for the better is our mission. We promote the protection of the environment by utilizing cradle to cradle manufacturing techniques, as well as the integration of biological deterrents to protect the local ecology. The increased dissemination of renewables leads to the empowerment of underserved communities bringing about environmental justice, enabling communities to grow and thrive in a healthy environment. At ARC Industries, we know that delivering a higher standard of living and preserving our planet are not mutually exclusive, the Orb can make that a reality.

Description of the Project: ARC Industries will conduct a project to determine the efficiency of their 3kW roof-top mounted vertical axis wind turbine and the effects it may have on wildlife.

Timeline

Dates	Key Tasks and Milestones
Oct-Nov 2021	<ul style="list-style-type: none">● Site planning and preparation<ul style="list-style-type: none">○ Site visit/inspection○ All relevant blueprints and documentation provided○ Engineer approval○ Building Permit○ Deployment of instrumentation
Oct-Nov 2021	<ul style="list-style-type: none">● Preliminary Monitoring<ul style="list-style-type: none">○ Deployment of instrumentation at site○ Initial report
Nov 2021-Jan 2022	<ul style="list-style-type: none">● Permitting & Turbine Installation<ul style="list-style-type: none">○ Installation of turbine completed on site○ Initial functionality and safety testing
Jan 2022-Jan 2023	<ul style="list-style-type: none">● Monitoring of Turbine<ul style="list-style-type: none">○ Monthly data summary reports

Feb-Mar 2023	<ul style="list-style-type: none"> Decommissioning/project extension/buy-out <ul style="list-style-type: none"> Final project report
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Deliverables

- **Monthly data summaries**
- **Final project report**
- **BED support for permitting process (as required)**

Project Overview

Process	The Project will be completed in four phases:
1. Preliminary Data Collection	During the preliminary data collection phase, BED will provide the awardee with the location of the project and facilitate access for the deployment of instrumentation for data collection, as well as provide all necessary building blueprints, and specifications. The awardee will perform a site visit with a licensed engineering firm and upon approval move forward with a confirmed installer, have a budget created, conduct a site visit, and begin preliminary monitoring of wind speed, wind direction, and wildlife activity.
2. Turbine installation	In the installation phase, the agreed upon installer will install the turbine and conduct the electrical installation.
3. Monitoring	In the monitoring phase, the awardee will monitor the effectiveness of the turbine and continue to monitor the data from the data collection phase to analyze. This includes but is not limited to: power generated, wind speed, wind direction, wildlife activity, and turbine speed.
4. Post-project	During the post project phase, BED and the awardee will come to an agreement on the follow-on tasks. BED will decide if it will decommission the turbine, extend the project, or buy-out the turbine.
Cost	***To be determined after Building location has been verified***

Exhibit B – Project Budget

Items	Unit Cost	Units	Total	Due Date
Engineering Design Review	\$ 2,000	1	\$ 2,000	10 days after completion & invoice received
Installation	\$ 3,500	1	\$ 3,500	10 days after completion & invoice received
Travel/Monitoring		N/A	\$ 2,000	10 days after Effective Date & invoice received
Decommissioning	\$ 2,500	1	\$ 2,500	10 days after Decommissioning begins & invoice received
Total			\$ 10,000	

Exhibit C – Project Extension Budget

The budget and term of the Project Extension will be determined by BED and ARC Industries.

Exhibit D – Buy-Out Budget

The budget and term of the Project Buy-Out will be determined by BED and ARC Industries.