To: Steven Chybowski
From: Nick Martin, Senior Consultant, Dunsky Energy + Climate Advisors
Cc: Alex Hill, Partner, Dunsky Energy + Climate Advisors
Date: 2022-10-07
Re: Addendum to RFP submission for MPS Refresh (EERMC-2022-03)

1 Context

At the request of the Rhode Island Energy Efficiency & Resource Management Council (EERMC), Dunsky has submitted an updated bid alternative cost proposal sheet for the Rhode Island Energy Efficiency Market Potential Study Refresh (RFP# EERMC-2022-03) that includes budgets for the following optional scope items: (1) electric vehicle adoption modeling using Dunsky's Electric Vehicle Adoption (EVA) model, and (2) granular heat pump adoption modeling using Dunsky's Heating Energy Decarbonization (HEAT) model. Both items are briefly described in Appendix B the technical component of Dunsky's original proposal.

The following memo provides additional scoping details for each optional item to accompany the budget costs. Additionally, it also includes the CVs for additional Dunsky team members that would contribute to the optional scope items but were not included in the original scope and proposal.

2 Electric Vehicle Adoption Modeling

2.1 Step 1 - State-Wide EV Adoption Forecasts

Using the EVA model, Dunsky will model the uptake of light-duty, medium-, and heavy-duty vehicles within Rhode Island over a study period of up to 15-years (precise study length can be at the Council's discretion) using the following approach:

a) **Market and vehicle characterization**: Segment the market into representative vehicle classes, and characterize key segments using key data on fleet size, annual vehicle sales, usage patterns, as well as other general market data such as electricity and fuel prices, charging infrastructure availability, home charging access, etc.

b) **Model calibration**: Using available data, EVA will be benchmarked to historical EV adoption in the state, and key model parameters will be calibrated to capture state-specific market characteristics.

VEHICLE SEGMENTS

While there are numerous ways to segment the vehicle market, our team proposes a segmentation that maintains a balance between the breadth and depth of analysis. Specifically, for the purpose of this study, we propose the following breakdown:

- Passenger Light duty vehicles (including passenger cars, SUVs/crossovers, and pickups)
- Commercial Light duty vehicles (including passenger cars, SUVs/crossovers, and pickups)
- Medium duty trucks (including goods transportation and medium vocational vehicles)
- Heavy duty trucks (including short- and long-haul transportation and heavy vocational vehicles)
- Buses (including transit, school and coach buses)

Based on our experience conducing similar studies across all vehicle segments, we have found that the proposed level of granularity is sufficient to capture the key factors that impact the potential for EVs within different segments / vehicle types, including EV model availability, driving patterns, technical needs, forecasted EV costs and operational savings based on typical vehicle characteristics and duty cycles.

2.2 Step 2 – Scenario Analysis

Using the calibrated version of the model, we will model EV uptake under various scenarios that reflect different market, policy and technology conditions.

As market realities may vary from the forward-looking projections, we will identify key market, technology and policy uncertainties and risks, and perform sensitivity and scenario analyses to determine their impact on EV market demand. Working with MPSMT, we will define **three scenarios** that represent key policy/program interventions and key market and technology uncertainties to help capture the range of possible futures. These factors may include:

- Electricity and fuel prices: uncertainty around electricity price and motor vehicle fuel price projections

- EV costs: uncertainty around future cost declines
- Incentive programs and other policy interventions: future incentives/rebates for EV purchases and/or ZEV mandates
- Public charging infrastructure deployment: uncertainty around the availability of public charging infrastructure

2.3 Step 3 – Load Impacts Assessment

Based on forecasted EV adoption within Rhode Island, we will develop projections of the associated load impacts. Specifically, we will assess:

- **Energy consumption (GWh)** associated with EV charging loads. Our assessment will consider typical driving distances, battery sizes, vehicle efficiencies and other characteristics of each of the modeled vehicle segments. Energy impacts will be broken down by type of charging event including residential home charging, workplace charging (personal vehicles), commercial fleet depot charging, and public charging (Level 2 and direct current fast chargers). Associated emission impacts will also be quantified and reported.
- **Peak demand (MW)** associated with EV charging loads. To properly capture the peak load impacts of EVs, our team will leverage diversified load profiles (from our internal databases as well as industry and academic publications and studies) that capture the typical load impacts attributed to passenger and commercial EVs modeled in this study for each type of charging (e.g., home, workplace, commercial fleet, public level 2, public DCFC). These diversified load profiles capture the distribution of the timing and utilization of charging events by different EV drivers to estimate the coincident peak demand. For example, although a typical EV may charge at a Level 2 home charger rated for up to 7.2 kW, on an average peak day/hour, it is highly unlikely that all EVs will be simultaneously plugged in or charging at full power, and the average per-EV peak load is typically found to be between 1 and 1.5 kW.

The load impact analysis will primarily focus on assessing the load impacts of unmanaged EV charging, which will directly feed into the assessment of demand response potential in the core scope of the MPS refresh, where the potential for peak load reductions associated with EV load management strategies will be assessed.

2.4 Step 4 – Reporting

The results of the electric vehicle adoption modeling will be reported in conjunction with the reporting schedule for the MPS Refresh as described in the original proposal and included in the report as an additional chapter.

3 Granular Heat Pump Adoption Modeling

3.1 Step 1: Market Characterization

Leveraging the market segmentation and characterizations developed under the core scope for the MPS refresh, we will define key heating system market metrics to determine the baseline conditions for key end-uses and technologies including configurations of baseline heating equipment (e.g., electric baseboards, electric furnaces, etc.) and baseline cooling systems (e.g., central AC, room air conditioner, no AC, etc.).

In addition to the data described above, we will obtain the following data to populate the HEAT model (leveraging data inputs prepared under the core scope for the MPS refresh where possible), preparing it to run detailed projections of various heat pump adoption scenarios:

- Installed equipment costs
- Projected energy prices (electricity, demand charges, etc.)
- Equipment availability and performance specifications (e.g., projected SEER ratings for heat pumps)
- Local hourly climate data
- Market data (customer counts and equipment penetrations for each market segment/sector)

3.2 Step 2: Populate HEAT Model

The HEAT model will determine the uptake of various heat pump technologies in buildings by assessing thousands of market permutations accounting for the applicable HP technologies, backup systems, sizing and control strategy for each building archetype and use. HEAT applies adoption curves that account for:

- **Customer economics** when the full cost of service is considered (i.e., installation, back-up system costs, equipment maintenance, energy and peak load costs, etc.)
- **Market barriers** and local market characteristics, such as low-income and rental split incentives, contractor capacity and training, novel equipment availability, as captured through technology diffusion curves;
- **Competition** between measures available to potential adopters to estimate the proportion of customers that will opt for a given measure given its relative financial returns and market barriers faced.

The model's highly granular bottom-up structure allows us to capture the potential for heat pump adoption based not only on the baseline heating systems and their potential heat pump replacements but also on the remaining useful lives of both heating and cooling systems, partial vs. full replacements, heat pump sizing, and control strategies.

Based on the incremental measure costs and forecasted energy and maintenance savings, key customer financial metrics (e.g., payback) will be computed for each electrification opportunity system. The incremental measure costs will be defined by identifying the expected full cost streams of the

baseline case (replacing each equipment at the end of its useful life) and the altered cost streams after installing heat pumps, accounting for the avoided cost of the replaced heating and/or cooling system where applicable. Early replacement opportunities will also be considered in the model, where the economics of replacing existing systems is sufficiently favorable.

Once the model is fully populated, we will calibrate it to the local market conditions by back-casting electrification of key technologies. Historical data (where available) will be used to set calibration targets, tuning key market factors (i.e., diffusion curve settings) to obtain a match between the back-casting results from the model, and recent heat pump adoption rates in Rhode Island and/or analogous markets.

3.3 Step 3: Scenario and Sensitivity Analysis

Using the loaded HEAT model, we will then estimate economic potential with the same approach as applied in the core scope for the MPS refresh. We will then assess achievable potential under the same program configurations as developed for the core scope for the MPS refresh as well. Finally, we will conduct sensitivity analyses in the same manner as the core scope for the MPS refresh by considering ranges of energy prices, equipment cost declines, market barrier evolution, and technology availability, with specific levers and scenario assumptions to be determined in collaboration with the MPSMT.

3.4 Step 4: Reporting

The results of the granular heat pump adoption modeling will be reported in conjunction with the reporting schedule for the MPS Refresh as described in the original proposal integrated into the energy efficiency reporting in the narrative reports with additional narrative included regarding heat pumps specifically that highlights insights derived from the HEAT modeling.

4 CVs

The optional scope items include additional Dunsky team members than included in the original scope and proposal. The CVs for the additional team members are presented in the following order:

- Jeff Turner
- Mathieu Levesque
- Emma Hill
- Amara Slaymaker

JEFF TURNER

DIRECTOR

Jeff has over 12 years of experience in the fields of electric vehicles and sustainable mobility. At Dunsky, he regularly advises Canadian governments and utilities on technical, economic and market issues affecting electric vehicles and new forms of mobility. He has designed EV programs and strategies for the Government of Canada, advised provincial governments, municipalities and utilities in 8 provinces on their electrification strategies, and supervised the development of Dunsky's EVA forecasting model. During his career, Jeff has gained professional experience working with various automotive manufacturers, transportation research institutes, energy distributors and governments. He has a unique and relevant perspective on initiatives to encourage the adoption of clean energy technologies. His work has covered automotive engineering (personal and commercial vehicles), EV charging infrastructure, energy storage technologies, vehicle-grid integration, power demand management, as well as policies and strategies to encourage the widespread adoption of clean energy options.

Prior to joining Dunsky, Jeff worked for Powertech Labs, a subsidiary of BC Hydro, where he managed EV charging infrastructure projects, supported the adoption of EVs in commercial and government fleets and contributed to the development of policies and programs for governments and energy distributors. Jeff also worked for two years at Azure Dynamics, a manufacturer of hybrid and electric commercial trucks. Jeff holds a Master's degree in Mechanical Engineering from McGill University where his research focused on energy storage technologies and electric vehicles.

PROFESSIONAL EXPERIENCE

2017- DUNSKY ENERGY + CLIMATE ADVISORS

Director, Mobility

Electric Vehicles and Clean Mobility

- Developed a technology roadmap for high-power charging and advising NRCan on the implications for EV charging infrastructure funding programs.
- Forecasted the potential adoption of EVs in Quebec under various policy scenarios to inform the development of new ZEV mandate targets.
- Forecasted the incremental purchase cost and cost of ownership of EVs across various vehicle segments to inform the design of a provincial financial incentive program.
- Developed Municipal Electric Vehicle Strategies for Halifax and Victoria, including a focus on public charging infrastructure deployment and EV-ready construction in residential buildings.
- Developed an EV business plan for SaskPower, including recommendations for utility investment in charging infrastructure, best practices for EV education and awareness initiatives, and forecasts for likely adoption of EVs within the province and associated impacts.
- Assessed the costs and benefits of EV charging load management under a BC Hydro trial with the City of Vancouver’s municipal fleet.

- Developed an EV charging infrastructure strategy for the City of North Vancouver based on stakeholder consultations and detailed modeling of various incentive and infrastructure deployment scenarios.
- Supported the development of the City of Toronto's Electric Mobility Strategy through research, stakeholder consultations, and policy/program scenario modeling.
- Supported the design of Natural Resources Canada's $130M Zero Emission Vehicle Infrastructure Program through jurisdictional research and stakeholder consultation.
- Provided guidance on residential demand response opportunities for NB Power, including smart thermostats, smart water heaters, energy storage systems, and EV smart charging.
- Supported the development of Dunsky's EV Adoption model, to assist utilities and governments in forecasting EV adoption and assessing the impact of various market and policy scenarios, including vehicle availability, financial incentives and charging infrastructure deployment.
- Assessed the potential for adoption of electric vehicles in Calgary on behalf of ENMAX, including analysis of the impact of a variety of policy and program scenarios and charging infrastructure deployment strategies.
- Developed an EV charging infrastructure strategy for federally owned buildings on behalf of Public Services and Procurement Canada.
- Supported the development of Natural Resources Canada's (NRCan) Research, Development and Demonstration funding programs for low carbon transportation by conducting research and interviews to support opportunity assessment and elaboration of strategic priorities.
- Conducted a study of EV availability at dealerships across Canada on behalf of Transport Canada.
- Supported the adoption of electric vehicles within municipal fleets in BC and Alberta, including the development of a province-wide incentive program for municipal fleet electrification in Alberta.
- Provided BC Hydro with an assessment of electric bus technologies and the opportunities for vehicle-to-grid integration.
- Supported the development of a residential charging pilot program with Nova Scotia Power, focused on vehicle-grid integration.
- Provided an assessment of EV technology and market evolution for the Quebec and New Brunswick governments to support incentive program design.
- Assisted NRCan with the development of EV and alternative fuel infrastructure funding programs, including leading consultations with government, utility, and industry stakeholders, and conducting an assessment of long-term (2050) charging infrastructure needs at the national level.
- Assessed long-term GHG emissions reduction opportunities in the transportation sector in Quebec and Nova Scotia, including through electrification, shared mobility, and active transportation.
- Assessed the potential for adoption of light-, medium-, and heavy-duty EVs for an electric utility in the US Northeast, including modeling of uptake under various policy scenarios, and developing geographically granular forecasts to identify sub-regions with particularly high adoption.
- Supported evaluation studies for National Grid's Massachusetts, Rhode Island, and New York electric vehicle market development programs.

Fleet Electrification

- Developing a Municipal Medium and Heavy Duty Zero Emission Vehicle Strategy for a group of five local governments in British Columbia, including Vancouver. Served as a senior technical advisor on

the development of a menu of actions that municipal governments can take to accelerate the adoption of medium and heavy duty zero emission vehicle strategy.

- Assessed the barriers to adoption of EVs in medium- and heavy-duty fleets on behalf of Propulsion Quebec, including the development of international case studies and identification of key levers for action for governments, utilities and other stakeholders.
- Advised Natural Resources Canada on the potential for adoption of EVs in a range of medium- and heavy-duty vehicle applications, including buses and commercial trucks, with a focus on potential fuel and GHG savings. Performed similar analysis for two electric utilities with an additional focus on load impacts on the electric grid.
- Assessed the barriers to adoption of electric school bus and provided recommendations for actions by the Quebec government to overcome these barriers. Analysis included an assessment of upfront incremental costs and estimated fuel savings across the province-wide fleet of 8000 buses.
- Provided the City of North Vancouver with a roadmap for the electrification of their fleet vehicles, including an audit of their fleet of light-, medium- and heavy-duty vehicles, assessing utilization and fuel costs, estimating the purchase costs of suitable EV replacement vehicles and charging infrastructure, and estimating fuel and maintenance savings.
- Assessed the potential for fuel savings and opportunities for EVs within a private commercial fleet with nation-wide operations across Canada.
- Assessed low-carbon freight transportation opportunities in New Brunswick and Newfoundland and provided recommendations and detailed program design criteria for related incentive programs.

2012-16 POWERTECH LABS

Project manager, Electric Vehicles and Energy Systems

- Project manager and lead engineer for projects relating to electric vehicles, charging infrastructure, and grid modernization, leading project teams of 4 to 6 engineers.
- EV subject matter expert for Grid Modernization department and technical advisor to parent company BC Hydro's EV Program Office, developing utility policy for supporting EV adoption in BC.
- Led consulting projects with organizations seeking to encourage EV adoption within their own operations and among the general public. Supported the development of sustainable transportation policies at such organizations as the City of Vancouver, Metro Vancouver and the Vancouver International Airport.
- Defined, executed and reviewed projects focused on demand response and load control with EVs, smart thermostats, water heaters, and commercial and industrial sites.
- Developed a data aggregation platform for collecting and analyzing usage data from over 400 charging stations across multiple charge station networks. Led analysis and reporting activities focused on infrastructure utilization, grid impacts, and business opportunity assessment.
- Led the development, testing and demonstration of multiple smart charging technologies, enabling electric utilities to control or influence EV charging loads in order to minimize impacts on electric infrastructure.
- Collaborated with automakers, charge station suppliers, network operators, EPRI and SAE to define the EV charging standards landscape and develop products and system architectures that can support a wide variety of technical and business requirements. Represented BC Hydro on the EPRI EV Infrastructure Working Council and the SAE EV Charging Standards Task Force.

- Supported BC Hydro's deployment of DC Fast Charging Infrastructure (e.g. planning, technology assessment, operations and analytics).
- Lead engineer for battery storage system projects, including a microgrid demonstration project with a 500kWh battery and 250kW solar array.

2011-12 AZURE DYNAMICS

Applications Engineer

- Controls engineering lead for the 2012 Ford Transit Connect Electric, controls engineering support for a variety of **other hybrid and electric truck platforms.**
- Managed the development of vehicle and component firmware for production and infield upgrades, leading a team of 2-4 applications and software engineers.
- Developed system requirements and control strategies for various electric and hybrid vehicle platforms, with a focus on high voltage battery and on-board charging systems.
- Primary contact with high voltage battery, charger and charge station suppliers.
- Oversaw and assisted with extensive in-vehicle testing, analysis and calibration, with a team of 2-3 test engineers.
- Provided engineering support to sales and product support teams.

2007-08 GOINGREEN ELECTRIC VEHICLES

Service Engineer – London, UK

- Performed testing, diagnosis and repairs of electric vehicle motor and battery systems
- Developed EV battery testing procedures, coordinated all battery testing and replacement activities

2007 MCGILL UNIVERISTY

Research assistant – Vehicle Engineering Research and Technology Transfer

- Developed electric and hybrid vehicle powertrain modeling tools to support vehicle design optimization
- Assessed life cycle emissions of various electric vehicle designs and applications
- Designed and built a variety of hybrid and electric prototype vehicles.
- Performed data collection and analysis to validate powertrain modeling activities.

EDUCATION

Master of Engineering, Mechanical	McGill University, Montreal	2011
B.A.Sc., Mechanical Engineering	McGill University, Montreal	2007

LANGUAGES

English, French

MATHIEU LÉVESQUE

P.Eng., M.A.Sc., MBA

SENIOR CONSULTANT

Mathieu combines an engineering background with more than 10 years of experience in energy efficiency, HVAC design, deep energy retrofits, thermal storage, and other building decarbonization measures and strategies. Since joining Dunsky, he has supported the development of the firm's Heating Electrification Adoption (HEAT™) model, which he recently used to assess, among others, Manitoba's and Massachusetts' heating electrification potential (integrated with efficiency, demand response, and electric vehicles). He also led a program review on incentives for VRF heat pumps, coordinated Québec's Working Group on the Electrification of Québec's Economy, and led several DSM potential studies.

Previously, Mathieu worked for engineering consulting and energy performance contracting firms as an energy efficiency project manager and designer, gaining strong analytical, communication and project management skills. He holds a master's in mechanical engineering with a focus on building performance from École Polytechnique de Montréal as well as a master's in business administration (MBA) from HEC Montréal. He is registered as a Professional Engineer in Québec and is a certified LEED GA and a recommissioning (RCx) agent.

PROFESSIONAL EXPERIENCE

2018 – Present DUNSKY ENERGY + CLIMATE ADVISORS, Senior Consultant

Consulting services in energy efficiency, renewable energy and mobility policies and programs

Opportunities

- Leading the heating electrification potential analysis for Massachusetts (Eversource Energy and Cape Light Compact) and Efficiency Manitoba, using Dunsky's HEAT™ model.
- Applied Dunsky's HEAT model for two leading Canadian gas distribution utilities to evaluate the most optimal pathways to reach their GHG reduction targets in residential and commercial buildings.
- Coordinated the DSM Potential Study for ComEd (Illinois); helped define and interpret market baseline metrics across 23 market segments and applied our bottom-up DEEP™ model to assess the technical and economic potential for the full range of current and emerging electricity saving opportunities.
- Contributed to the energy conservation measure characterization as part of the 25-year DSM potential study for NB Power, which includes both electricity and fuels.

Program Evaluation

- Led program review of incentives for VRF heat-pumps in Nova Scotia's new construction MURBs sector where natural gas is available; included jurisdictional scan, interviews with local market actors and building energy simulations.

Strategies

- Lead the research as well as the development of the report for Electrifying Canada, a new business-led taskforce focused on accelerating smart electrification across the country. Based on both quantitative analysis and interviews with business and industry leaders across the country, the Taskforce report proposes a series of solutions to begin addressing the real-world barriers that are delaying electricity's breakout as the dominant energy source to fuel Canada's clean economic growth and prosperity.

- Coordinated the Electrification and Energy Efficiency Working Group, one of five formed by the Québec government as part of a larger consultation process designed to inform the development of the province's 2030 climate action plan.
- Lead the development of a three-year roadmap for a new alliance whose objective was to improve innovation and energy performance in the Québec residential construction and renovation sector. The plan was based on a jurisdictional scan of leading States and provinces and an analysis of innovation barriers from interviews with fifteen key players in Québec.
- Led the development of an award-winning energy efficiency investment plan for a major Canadian hardware retailer's fleet and buildings operations.

2016-17 ECOSYSTEM ENERGY SERVICES, Design Project Engineer
Energy Performance Contracting firm

- Contributed in all aspects of turnkey deep energy retrofit projects in existing C&I buildings:
  - analysis of energy billing and HVAC systems
  - development of innovative whole-building energy conservation measures (*including ground-source & air-source heat pumps, as well as heat recovery chillers*)
  - calculation of energy and maintenance savings, construction costs, subsidies
  - development of plans and specifications
  - close collaboration with the construction manager during measure implementation
  - post-retrofit monitoring and continuous performance optimization
- Participated in bids for deep energy retrofit projects in community colleges, elementary and high schools, class A office buildings, multi-unit residential buildings and large industrial facilities, in close collaboration with clients to develop solutions tailored to their specific energy and non-energy needs
- Led the design of an innovative and highly energy-efficient open-loop geothermal heating and cooling system in a large high-school as part of a multi-school deep energy retrofit project

2012-15 PAGEAU MOREL, Mechanical Engineer
Engineering consulting firm

- Managed HVAC design projects in new and existing office, school, university and community buildings, in close collaboration with all project stakeholders (client, architect, civil and electrical engineers).
- Participated in the design and energy simulation of a new LEED-certified community center.
- Led design and built a simulation model of a sand-bed thermal storage system that leveraged the backfill under the new North York MEC store; also contributed to the design, energy simulations and documentation of company's Platinum- and Gold-level LEED certified stores and head office in Canada.
- Performed energy audits for large office buildings as part of their LEED or BOMA BEST certifications.
- Participated in the recommissioning study of a university's 16-story, multi-purpose EV building.
- Contributed to community-scale energy simulations of a district heating and cooling system as part of the conceptual phase of a sustainable, mix-use redevelopment project in Montréal.
- Participated in the GHG inventory and emissions reduction plan for a small Québec municipality.

EDUCATION

MBA	HEC Montréal	2018
M.A.Sc., Mechanical Engineering	École Polytechnique Montréal	2012
B.Eng, Mechanical Engineering	École Polytechnique Montréal	2010

EMMA HILL

PRINCIPAL ANALYST

Emma has 4 years of experience in the environmental and sustainable energy sector with strong research, analytical, and communication skills. Since joining, she has worked on numerous transportation electrification projects, forecasting the uptake of EVs and associated load impacts in different jurisdictions across Canada and the United States and supporting infrastructure deployment plans. She serves as Dunsky's lead on the Electric Vehicles Adoption Model (EVA).

Prior to joining Dunsky, Emma worked for Pollution Probe, an environmental charity, where she coordinated projects dedicated to advancing energy literacy and transitioning Canada to a low-carbon economy. Prior to this, Emma worked as a junior analyst and report specialist for a start-up company that uses aerial infrared technology to assess and report on solar PV sites and as a media and communications analyst for an environmental communications firm. Emma holds a bachelor's degree in science from Queen's University and a master's degree in environmental science from the University of Toronto.

PROFESSIONAL EXPERIENCE

2020 – Present **DUNSKY ENERGY + CLIMATE ADVISORS**
Principal Analyst

Clean Mobility

- Modelling and analysis forecasting load impacts of electric vehicles for utilities in California and Alberta
- Researched and analyzed historical and projected vehicle data to model and forecast light-duty EV adoption across Massachusetts for the utility Eversource
- Conducted a jurisdictional scan of utility electric vehicle programs and strategies (including charging rebates, charging rates, vehicle to grid programs) in the US and Canada
- Modelling and analysis of Canadian EV infrastructure targets for Natural Resources Canada
- Supporting SaskPower in the development of the utility's EV strategy, including research on charging infrastructure approach
- Led modelling of business model options for the City of Vancouver in support of charging infrastructure in the City, particularly parking lots and gas stations.
- Supported the development of an e-mobility strategy for the City of New Westminster, including the development of a methodology for calculating low-carbon fuel standard credits for residential ZEV charging associated with the city-owned utility
- Modelling and analysis for the Toronto Parking Authority's EV Charging Strategy Deployment
- Modelled and analyzed business model options for Translink to install EV charging infrastructure for shared vehicle fleets on its parking sites
- Modeled and forecasted light-duty EV adoption for the City of Montreal and analyzed historic adoption of EVs and socio-economic factors to develop interactive EV adoption maps of Montreal and the surrounding suburbs (CMM), per borough and city
- Supported the development of a municipal electric vehicle strategy for the City of Halifax

- Supported writing an executive summary for a potential study report on Electric Vehicle (EV) adoption in New Brunswick for the utility NB Power

Market Assessment

- Researched the Ontario energy market to design an Ontario market assessment guide
- Supported a feasibility and cost assessment project on the fuel switching potential and associated costs of converting five remote communities in Nunavut from fuel oil to electricity
- Researched and developed an assessment spreadsheet on technology companies that are utilizing advanced analytics and artificial intelligence software to advance the energy sector

2018-20 POLLUTION PROBE

Research and Project Coordinator

- Researched and assessed the downstream use of natural gas in Canada to define policy recommendations on how the natural gas sector can support the low-carbon energy transition
- Presented at the Queen's Global Energy Conference on Ontario's electricity grid projections and what they mean for Toronto's GHG emissions
- Designed, planned and promoted four community engagement events in Canadian municipalities that focused on engaging the public and stakeholder groups on proposed renewable energy changes in their local community
- Managed a multi-year project on the role of big data and smart computing in advancing water protection across the Great Lakes – deliverables included stakeholder workshops, literature reviews, final reports and executive summaries for each phase
- Helped develop and coded the Excel-based Smart Energy Communities Benchmark tool, to help local governments and utilities benchmark their communities against their peers across 10 community energy indicators

2017-18 HELIOLYTICS

Junior Analyst and Report Specialist

- Explored and used GIS tools at Heliolytics, an infrared solar monitoring company, to independently analyze hundreds of client sites and produce dozens of detail-oriented reports that enhanced the efficiency of solar energy farms
- Used advanced problem-solving skills and initiative to find innovative solutions to overcome technical barriers when analyzing new client sites

2016 ECO STRATEGY

Media and Communications Analyst

- Liaised with the press to ensure client projects reached media outlets, the public, and stakeholders
- Drafted media releases and advisories, managed large-scale e-mail campaigns, and evaluated communication analytics of projects for multiple clients

EDUCATION

MEnvSc, Climate Change Impact Assessments	University of Toronto, Toronto	2018
BSc, Biology and Math	Queen's University, Kingston	2015

AMARA SLAYMAKER

ANALYST

Amara brings 2+ years of experience in the energy sector, including experience in system modelling and optimization, renewable energy policy and data analytics. With Dunsky, she works frequently on heating electrification adoption modelling for projects supporting energy policy development, decarbonization and potential studies. She holds a master's in energy science and technology from EPFL (École Polytechnique Fédérale de Lausanne), where she specialized in Energy Management and Sustainability. Her master's thesis focused on developing a Canadian version of EnergyScope, a sector-wide optimization-based techno-economic energy system model, and applying this to study what Canada's energy system could look like in 2050 considering a net-zero target.

Previously, Amara worked with IRENA (the International Renewable Energy Agency) on an assessment of policies and measures for renewable energy in Africa and identifying gaps between the existence of policies, and the capacity for actual implementation.

Amara also holds a bachelor's of chemical engineering from McGill. She is passionate about sustainability, and driven to find solutions that accelerate a clean, just and inclusive energy transition.

PROFESSIONAL EXPERIENCE

2021 DUNSKY ENERGY + CLIMATE ADVISORS
Analyst

BUILDINGS

Heating Electrification Adoption (HEAT) Modeling

- Model heating electrification adoption to support a potential study for Manitoba
- Assess the potential impact of various incentives and policies to accelerate heating electrification and decarbonization of the buildings sector in Manitoba

RENEWABLES

Solar and Wind Supply Chain Analysis

- Conducted interviews with actors across all levels of the supply chain to understand the capacity for realization of solar and wind projects in Quebec, and potential challenges or bottlenecks
- Analyzed the potential for ramping up solar and wind developments in Quebec, based on a combination of desktop research and insights from interviews

CROSS-CUTTING

Electrifying Canada Taskforce

- Support the Electrifying Canada Taskforce, a private-sector led initiative calling for and informing an actionable, evidence-based framework to electrify large shares of the Canadian Economy
- Analyze the current state of knowledge regarding the role of electrification in meeting net zero greenhouse gas emissions targets

- Conduct interviews with Canadian corporate leaders to understand their plans, barriers, and potential opportunities and solutions related to their decarbonization and electrification efforts

Manitoba Energy Policy Framework

- Analyzed the current state of Manitoba's energy consumption and greenhouse gas emissions, and conducted a jurisdictional scan to identify potential technical, market or policy innovations to support decarbonization in Manitoba
- Work with partner ESMIA to inform modeling inputs and analyze results of techno-economic optimisation modeling of Manitoba's energy system

2021 INTERNATIONAL RENEWABLE ENERGY AGENCY

Intern, Renewable Energy Policy Analyst

- Assessed the landscape of policies and measures to support renewable energy development in over 50 African countries, and analyzed their sufficiency and effectiveness, including identifying gaps between the existence of policies and the capacity for their implementation
- Identified key challenges in regions and countries across the continent and proposed policy and market based strategies to catalyze renewable energy development

2019 TERRAGON ENVIRONMENTAL TECHNOLOGIES

Implementation Engineer (Jr.)

- Managed projects to install and integrate Micro Auto Gasification System (MAGS), used for waste gasification and waste-to-energy applications by cruise and military ships, remote communities and industry
- Monitored the operation of MAGS installation through data analysis and regular communication with clients in order to troubleshoot and improve operations

EDUCATION

M.Sc., Energy Science and Technology	École Polytechnique Fédérale de Lausanne (EPFL) Lausanne, Switzerland	2021
B.Eng., Chemical Engineering	McGill University Montréal, Québec	2018