



Report to: General Committee

Meeting Date: April 3, 2017

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**SUBJECT:** Electric Vehicle Workplace Charging Pilot  
**PREPARED BY:** Graham Seaman, Director, Sustainability & Asset Management  
Ext. 7523  
Aaron Cheung, Energy Efficiency Support Coordinator ext. 5283

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**RECOMMENDATION:**

- 1) That the report “Electric Vehicle Workplace Charging Pilot” be received; and,
- 2) That the CAO be authorized to execute an agreement with Alectra Energy Solutions Inc., for a two year electric vehicle workplace charging pilot at the Civic Centre, in a form satisfactory to the CAO and the City Solicitor; and,
- 3) That the CAO be authorized to execute an agreement with Alectra Energy Solutions Inc. following the two year pilot, to purchase the pilot equipment for a nominal fee and for electric vehicle workplace charging services for five years plus an option to renew for an additional five years, in a form satisfactory to the CAO and the City Solicitor; and,
- 4) That Council approve the locations of nine electric vehicle charging stations at the Civic Centre as shown on Appendix A, configured as follows;
  - a. Five dual head Level 2 chargers in the outdoor parking lot capable of supplying 10 vehicles total, with access limited to program participants.
  - b. One single head Level 2 charger for public use with a fee of \$1/hr, adjacent to the existing Level 3 Fast Charger.
  - c. Three dual head Level 2 chargers in the parking garage capable of supplying 6 vehicles total, with access limited to program participants.
- 5) That Council endorse the preferred location shown in Appendix A of the ‘Solar Carport’, if funded by Natural Resources Canada; and,
- 6) Further that Staff be authorized and directed to do all things necessary to give effect to this resolution.

**EXECUTIVE SUMMARY:**

Alectra Energy Solutions Inc. (Alectra) and the Independent Electricity System Operator (IESO) seek to assess the role that smart electric vehicle charging stations at workplaces could play in managing peak demand on Ontario’s electricity system through the implementation of an “Electric Vehicle Workplace Pilot Project”, and they have selected the Markham Civic Centre as one of two workplace pilot locations in Alectra’s service area.

The Electric Vehicle Workplace Pilot Project differentiates itself from existing systems in North America in that it will manage the electricity loads to the electric vehicles (EVs) as well as building service equipment such as HVAC (Heating Ventilation and Air Condition) systems to minimize peak electricity demand. Peak electricity demand is measured by the monthly 15

minute peak flow of electricity needed from the grid; it is a component of the electricity bill we pay and it varies with the peak demand of the facility.

Similar to road and water infrastructure, the electricity system is designed to ensure reliable supply of electricity during peak demand periods. The proposed pilot project will allow Alectra and the IESO to understand how day-time demand of electric vehicle charging at workplaces will impact the Provincial electricity grid, and how that impact can be minimized to reduce possible future electricity infrastructure investments.

Alectra (formerly PowerStream) contacted City Staff in mid-2016 seeking information regarding potential medium to large employers in the City of Markham to participate in the Electric Vehicle Workplace Pilot Project. Culture and Economic Development Department Staff put forward the following employers for Alectra's consideration: IBM, the MMM Group, Crown Property Management (landlord for the former American Express site on Warden and the Allstate Business Campus) and the City of Markham (specifically the Markham Civic Centre site).

Alectra selected the Markham Civic Centre based on the following reasons:

- Relatively large staff complement
- Five existing daily EV users (plus a planned fleet EV)
- Existing Building Automation System (BAS) technology, with appropriate staff expertise; and
- The City of Markham's strong history of leadership and collaboration on sustainability projects.

The pilot project would include the installation of the following equipment in the Spring of 2017, at no capital cost to the City:

- Five dual head Level 2 chargers as shown on Appendix A capable of supplying 10 vehicles total, with access limited to program participants.
- One single head Level 2 charger for public use with a fee of \$1/hr adjacent to the existing Fast Charger.
- Three dual head Level 2 chargers in the parking garage capable of supplying six vehicles total, with access limited to program participants:
  - 18 EVs could charge simultaneously with the proposed chargers and the existing fast charger
  - Note: Level 3 (L3 400-600V / 50kW DC) electric vehicle supply equipment (EVSE) are capable of charging to 80% battery capacity in 30 minutes, Level 2 (L2 240V supply) are slower and can charge to 100% capacity in about four hours, Level 1 (L1 120V) are the slowest and can charge to 100% capacity in 12 plus hours.
  - The marked hydrogen vehicle fueling station location on Appendix A is for future considerations only and is not part of this pilot project scope.
- Distributed Resource Management System (DRMS) - the brains of the smart charging technology that will monitor building electricity demand, electricity market costs and demand response signals, and will provide instructions to the chargers or building systems to reduce electricity demand.
- If additional funding from Natural Resources Canada is granted, Alectra is proposing the

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following additional equipment to further enhance the research and development opportunity of this pilot project:

- Solar photovoltaic carport and large battery - a set of solar panels located above select parking stalls that will charge a large battery that can then be dispatched to charge EVs or supply the building to further reduce electricity demand from the grid.
- Note: High voltage signage and existing security measures, including CCTV at the Civic Centre will help to deter vandalism or improper use of the structure.

The Electric Vehicle Workplace Pilot Project is 50% funded by Alectra, its partners, and the IESO. The IESO has committed \$933,500 from its Conservation Fund, while Alectra and its partners have committed to match this amount in the form of a combination of funding and in-kind services and products. The Civic Centre would be one of two sites for this pilot project, with a second site to be determined in another region serviced by the new Alectra service territory.

The pilot project is seeking a minimum of 10 participants, and would ideally target 15 participants, or approximately 5% of the Civic Centre's staff complement as a target goal of the pilot program. To grow the EV user base to meet the pilot project targets, an EV awareness and experience campaign will be developed and implemented for City Staff with support from the pilot project team (consisting of City Staff and external project partners).

A survey was administered in March 2017 to gauge the number of possible EV purchasers to participant in the prospective Electric Vehicle Workplace Charging Pilot. It found that between City Staff and Unionville High School staff there should be enough possible EV purchasers over the duration of the two year pilot project to meet the 15 participant target.

Program participants will be expected to allow a data logger to be installed in their EV that will collect driving and charging use information, and participate in regular surveys and focus groups hosted by the pilot project team, to inform the pilot project partners on the pilot project's effectiveness. A privacy review will be conducted prior to program launch to ensure personal identification and any sensitive data from the program participants remain confidential and protected.

The Electric Vehicle Workplace Pilot Project will be structured as electricity cost neutral to the City; the cost of electricity supplied to pilot program participants will be recovered via a payroll deduction. These deductions will be set annually for each participant and may range from \$10/month (formerly PowerStream's practice) to up to approximately \$50/month depending on user charge requirements measured during the pilot.

Program participants will be required to sign a program participation agreement (approved by Alectra and the City) prior to participating in the pilot project.

During the pilot, it is recommended that the City offer an incentive of a \$25 gift card voucher to each participant attending a one hour lunch-provided focus group session, hosted by the pilot project team on a quarterly basis. Any gift voucher purchased by the City and given to City Staff participating in the pilot will be considered a taxable benefit. Each survey and focus group

completed by a participant will be entered into a draw at the end of the pilot project for one grand prize of a \$100 gift card voucher. The draw will be run by the pilot project team and will only include program participants. This provides a further incentive for continuous program engagement, and recognition for the participants' feedback and time commitment.

Bonus incentives offered or facilitated by Alectra may include manufacturer or dealer discounts on the purchase of an electric vehicle or discounted lease rates. Furthermore, the Province has committed in the 2016 Climate Change Action Plan to provide no cost electricity for EV charging overnight starting sometime in 2017. The value proposition for an EV is quite good, and will be detailed as part of the planned City Staff engagement program.

The existing Level 3 (L3) fast charger at the Markham Civic Centre will remain in operation to support inter-regional travel at a cost for charging of \$10/hr. In addition, one public Level 2 charger will be installed adjacent to the existing Level 3 unit. This new L2 unit will not be part of demand curtailment and therefore will be available 24/7 for visitors not needing the fast charge service, at a cost of \$1/hr.

Staff from the Sustainability & Asset Management Department has consulted with Operations, Culture and Corporate Communications to secure a location which minimizes disruption to the many events, services and grounds care needs at the Civic Centre, and recommend the electric vehicle supply equipment be installed as shown in Appendix A. This location is in the northwest corner of the Civic Centre's main parking lot.

Information Technology Services was consulted to ensure network communications required by the Distributed Resource Management System (DRMS) adheres to the corporate ITS policy.

Alectra will own, and operate the equipment, and be responsible for all costs during the pilot project. Alectra proposes to sell the equipment to the City for \$1 at the end of the pilot project, provided a service agreement can be negotiated prior to completion of the pilot project. Based on pilot data analysis, and in collaboration with Alectra, City Staff will seek to arrange a cost neutral service agreement, whereby the demand savings from the deployed technology and revenue for charging fees will net no incremental new cost to the City, including future lifecycle replacement of the hardware and software. If an acceptable agreement cannot be reached, the equipment will be removed by Alectra at no charge to the City.

**PURPOSE:**

The purpose of this report is to seek Council approval for the City's participation in Alectra's Electric Vehicle Workplace Pilot Project at the Markham Civic Centre.

**BACKGROUND:**

Over the coming years, it is expected that electric vehicles will become more prevalent in Ontario, given the government's mandate to have 5% (or approximately 34,000 units) of new car sales be electric by 2020.

The Government of Ontario's vision is for one of every 20 vehicles on our roads to be an electric vehicle by 2020 to support the creation of jobs and reduce greenhouse gas emissions. To incent



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EV uptake, the Province offers rebates on EVs up to \$14,000 per vehicle. Green license plates are also issued for EVs to allow single occupant use of the HOV lanes.

Based on FleetCarma's findings, there were 3,412 EVs (0.5% of all vehicles sales) sold in Ontario in 2016 - and the vehicle sales target needs to increase to approximately 34,000 units by 2020 to meet the mandated Provincial target of 5% of new car sales. In the 2016 Climate Change Action Plan, the government announced that workplace charging will be required to be provided in new commercial facilities beginning in 2018.

As the use of EVs becomes more common, the increased load from vehicle charging must be managed to reduce costs to both building owners and to utilities. Managed or "Smart Charging" provides opportunities for energy management that can both avoid unnecessary costs and create new sources of revenue for businesses and utilities. There is a potential that this solution could avoid the imposition of costs on the electricity system and ultimately for all ratepayers, unnecessary backlash against workplace electric vehicle charging, and negative impacts on motorists.

EVs require regular charging, and although the majority of EV owners will have a Level 2 charging station installed at home, the need to charge while on the go presents a challenge and induces "range anxiety". Increased availability of charging stations alleviates battery range concerns, enhances EV adoption, and presents a potential business opportunity.

As part of their innovative initiatives, Alectra will design and deliver a smart EV charging pilot project for commercial and institutional customers, using networked infrastructure to provide customers with a simple solution that will reduce energy costs and provide customer satisfaction.

A Distributed Resource Management System (DRMS) will take in real-time data to optimize EV and integrated building loads given site and provincial system requirements, represented by site demand, transformer loading, electricity price and demand response signals. The initiative is proposed to be deployed at the Markham Civic Centre.

There were approximately 4,900 commercial accounts in the former PowerStream territory. Therefore the potential market for workplace electric vehicle charging systems that manage electricity demand is about 4,900 and is even greater in the new Alectra service territory.

This project is targeting to achieve 5% electric vehicle ownership and program participation by employees who drive to their workplaces (in line with the Provincial target). This would equate to approximately 15 vehicles for the Markham Civic Centre. There are currently five City Council members/Staff that drive EVs to work, and an EV will be added to the City's fleet vehicles in 2017.

A survey to measure possible workplace EV pilot participation for the City and Unionville High School staff was administered by Staff from Sustainability & Asset Management and Corporate Communications; the results are summarized in Appendix B.

Unmanaged (or "dumb charging") Level 2 chargers (30A, 240V) consume 6 kW continuously while charging, the maximum charge once the car is plugged in. This increases peak demand at

both the facility and system levels, resulting in an increase of demand charges for the charger host as well as greenhouse gas (GHG) emissions from generation, which at peak times are likely to come from natural gas-driven generators.

To increase Alectra's analysis of EV driver's behavior, the EV service market, and their demands on the electricity grid, Alectra has secured a funding partnership with the IESO to install an array of EV Level 2 charging stations as well as a Distributed Resource Management System (DRMS) at the Markham Civic Centre, at no capital cost to the City.

The existing Level 3 charger at the Markham Civic Centre is the only publicly accessible charger within a 2km radius according to [www.plugshare.com](http://www.plugshare.com). The existing Level 3 fast charger is not seeing the utilization originally projected in the business case presented to Council in the Spring of 2015. Actual 2016 revenue was \$1,839 from 502 sessions, supplying a total of 4,873 kWh of electricity. The business case projected 2015 revenue of \$3,600 and 2016 revenue of \$8,400. The result is that the payback period for the City of Markham's 1/3 share of the cost to install this unit will extend beyond the originally expected five years. This disappointing result could be due to slower growth of EVs in Ontario than anticipated, and the fact that some early EVs are not able to use fast charging systems.

City Staff will examine launching a Civic Centre electric vehicle awareness campaign with an outcome goal of increasing awareness and education about electric vehicles, its benefits and related incentives. 29% of the Staff who responded to the City administered EV pilot project survey answered "unsure" regarding the likelihood of purchasing a Battery Electric Vehicle in the coming 8 months to 2 years. This statistic provides a great opportunity to develop an awareness campaign to encourage the growth of an electric vehicle culture with City Staff and the City of Markham community.

The Markham Civic Centre currently has 5 EVs on-site nearly every day during business hours: 5 are Council or Staff owned, and one will be a new City fleet vehicle due to arrive in 2017. The pilot project is primarily targeting current City Council members and Staff EV owners working at the Civic Centre location, to participate in the pilot project. The pilot project will include an active campaign by the project pilot team to promote and educate City Staff and other interested parties on the benefits of EV ownership, with a view to increasing workplace participation over the course of the pilot project.

The pilot project will provide additional public access to Level 2 charging stations, which may be attractive to adjacent condominiums and Unionville High School EV users. The City of Markham's Municipal Energy Plan (MEP) - a part of the long-term City-wide strategy for net zero energy, water, waste, and emissions by 2050, has gathered a great deal of data from the modeling stage. Referencing MEP baseline data period of 2011 to 2014, it was identified that the City's largest opportunities for reducing emissions are in buildings (49%) and transportation (37%). Therefore, providing leadership in adoption and data gathering for Alectra on electric vehicle workplace charging stations aligns well with the City of Markham's goals and strategies.

The Corporate Energy Management Plan (CEMP) was created to improve the City of Markham's energy management strategies, resources, and effectiveness. The CEMP illustrates key areas for actions that the City intends to pursue to better manage energy and maintain its

status as a leader in sustainability. Newly implemented Building Automation Systems (BAS) and optimization have shown approximately \$116,000 in energy savings and cost avoidance in less than one year.

The City of Markham also participates in IESO's Demand Response program, where facilities are paid to curtail their energy demand (kW) drawn from the grid during peak hours. Two City of Markham buildings are enrolled in the IESO's Demand Response program, with revenue of approximately \$15,309.98 per year to the City combined from both the Markham Civic Centre and Thornhill Community Centre.

Additionally, the City of Markham has one of the largest hosted solar portfolios of any municipality in Ontario; with the recent Pan Am Centre addition the City raised its solar portfolio to 1.83 MW.

### **OPTIONS/ DISCUSSION:**

Alectra has assembled a strong pilot project partnership team to provide state of the art hardware, software and analytic engines, service providers, and outreach event planning. This is evidence of their strong commitment to this initiative. A list of the team, their roles and contributions are attached as Appendix C.

### **Electricity Demand Response**

Through the pilot project, Alectra is proposing to install 17 electric vehicle charging heads at the Civic Centre that would be connected to the Building Automation System (BAS) so that both building systems and chargers can be throttled down to manage the peak demand of electricity needed through a Distributed Resource Management System (DRMS).

### **Proposed Location**

The recommended locations for the charging stations are as follows:

- Five dual head Level 2 (L2) chargers outdoor as shown on Appendix A, capable of supplying electricity to 10 vehicles total with access limited to program participants.
  - This location will minimize disruption to large events at the Civic Centre, Theater patron access and winter operations challenges.
  - If funding is granted for the solar carport, it will be placed as shown on Appendix A
- One single head Level 2 charger for public use with a fee of \$1/hr adjacent to the existing Level 3 Fast Charger
- Three dual head Level 2 chargers in the parking garage capable of supplying six vehicles total, with access limited to program participants
- Allowance for a future hydrogen fueling station or another alternative vehicle fuel is included.

An additional innovation layered on to this pilot project, if Alectra is successful in obtaining funding from National Resources Canada (NRC), would include a small solar/energy storage combination that would provide for emergency charging in the event of an outage, more flexibility for charging during peak hours, and the opportunity to reduce building loads when EV charging needs are low.

Should Alectra be successful in obtaining additional funding through NRC, on-site solar generation will be added at the Civic Centre. The solar generation will feed the battery, charging stations or facility demand, as determined by the DRMS. To deter vandalism or improper use of the solar carport structure, warning signage could be installed to work in conjunction with the existing monitoring from the Civic Centre's security cameras.

### **Linking Renewable Energy and Electric Vehicles**

From the standpoint of public communications, the pilot project also creates a direct connection between renewable energy and electric mobility which is expected to promote interest in electric vehicles. With the funding applied for through this project, Alectra will provide a solar photovoltaic array with integrated battery storage for at least one of two sites in this pilot project.

### **Project Funding**

Alectra has secured \$933,550.00 in funding from the Independent Electricity System Operator (IESO) for this pilot project, and is contributing cash and in-kind products and services itself and in-kind products and services from its partners to match the IESO contribution. The City of Markham will not be required to provide any capital funding for the acquisition and installation of the pilot project system. The overall budget to deliver two EV workplace pilot projects in the new Alectra service territory is \$1,867,000. The second site is yet to be determined.

Due to the high level of support from the pilot project team, anticipated operating costs aside from electricity (such as focus group expenses) will be managed within existing budgets and City Staff resources in the Sustainability & Asset Management Department.

### **FINANCIAL CONSIDERATIONS**

As the project is externally funded by Alectra and the IESO, the City of Markham will not incur any capital costs related to the pilot project system including the equipment, software and services, site preparation and installation.

The Electric Vehicle Workplace Pilot Project will be structured as electricity cost neutral to the City; the cost of electricity supplied to pilot program participants will be recovered via a payroll deduction. These deductions will be set annually for each participant and may range from \$10/month (formerly PowerStream's practice) to up to approximately \$50/month depending on user charge requirements measured during the pilot.

On completion of the pilot project, and in the event that the equipment is transferred to the City, the cost of ownership of the equipment such as maintenance, and all components of the DRMS solution, lifecycle replacement are intended to be offset by the revenue from vehicle charging and electricity demand savings.

### **City Operating Costs for Consideration**

Focus group activities are estimated to cost approximately \$1,900 to \$4,300 based on 5 to 15 participants, which includes taxable gift card vouchers and the cost of light lunch sessions over the 2 year pilot program. This would be funded either via an external sponsor or from the Markham Energy Conservation Office Balance Sheet account.



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**Future Life Cycle Costs**

If the pilot is deemed successful and the City opts to purchase the equipment and enter into a service agreement with Alectra, the Life Cycle impact of these new assets is anticipated as follows: Hardware and software life cycle of minimum 10 years, with the annual service cost to be paid to Alectra estimated to be approximately \$5,000 to cover maintenance and service visits. Staff proposes these costs be offset by MECO (Demand Response revenue) of \$15,000/yr included in the 2017 base budget.

**Risk Management**

Risks to achieving neutral cost to City after the pilot project include the following:

- Reduction in daily users of the EV charging equipment
  - Mitigation measure – continued staff education and engagement program.
- Little change in the overall demand charges for the Civic Centre
  - Mitigation measure - work to optimize system configuration, evaluate additional measures to be considered.
- Changes to electricity rates or rate structures
  - Mitigation measure - monitor rate structures and adjust system programming as necessary.
- Costs to maintain and replace the hardware and software are greater than expected and exceed the revenue
  - Mitigation measure – closely monitor pilot project needs and work closely with Alectra to structure appropriate agreement, may need to consider not moving forward with service agreement.
- Discontinuation of the IESO's Demand Response program
  - Mitigation measure – closely monitor IESO policy directions and engage as necessary.

**HUMAN RESOURCES CONSIDERATIONS**

Not applicable

**ALIGNMENT WITH STRATEGIC PRIORITIES:**

The pilot project supports the City's goals in the following ways:

**Safe and Sustainable Community** – EVs reduce fossil fuel consumption and therefore greenhouse gas emissions (GHG) and the resulting climate change. Transportation fuels are the largest contributor of GHGs in Ontario and Ontario's electricity mix is fairly low in GHG emissions.

**Stewardship of Money and Resources** – Implementation of Smart Electric Charger management solution to reduce typical high utility costs for the Owner through hosting of charging equipment.

**Exceptional Services by Exceptional People** – Early stage adoption of mass EV charging equipment provides enhanced services for City Staff and the City of Markham community and illustrates the City of Markham's innovative nature.

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Greenprint – Innovative technology package aids the many integrated sustainability priorities that form the Greenprint, steering the City of Markham towards the goal of net zero energy, water, waste and emissions by 2050.

Corporate Energy Management Plan – Active load balancing of integrated building systems and electric vehicle chargers in track with real-time utility pricing promotes the City's culture in energy conservation.

Municipal Energy Management Plan – Deployment of innovative technologies in the community demonstrates the City's position in championing energy efficiency and generation.

**BUSINESS UNITS CONSULTED AND AFFECTED:**

Legal, Finance, Operations, Culture, ITS, Corporate Communications

**RECOMMENDED BY:**



Graham Seaman, Director  
Sustainability & Asset Management



Trinela Cane, Commissioner  
Corporate Services

**ATTACHMENTS:**

Appendix A - Map

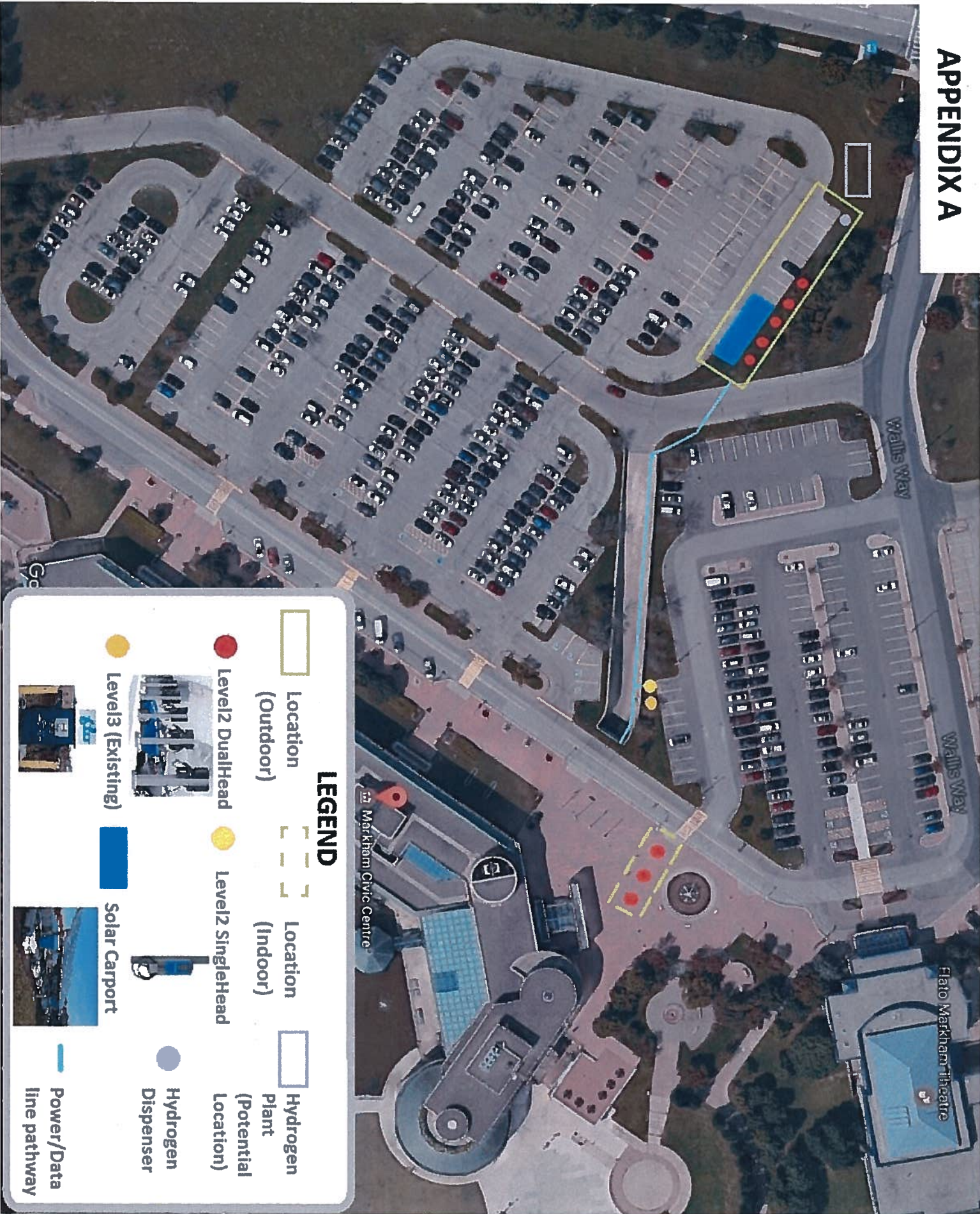
Appendix B - Survey Results & Analysis

Appendix C – Pilot Project Partners Roles & Contributions

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# APPENDIX A



### EV Pilot Survey & Analysis:

#### Survey Questions:

1) Under the incentives provided from the province, as well as the additional conveniences and incentives at the Markham Civic Centre, how likely are you to purchase a Battery Electric Vehicle (BEV) in the coming 8 months?

- Not likely: 50%
- Unsure: 29%
- Likely: 20%
- Based on 49 respondents, about 14 participants are not sure, 9 participants are likely to purchase a B-EV, and including the existing 5 EV users would total 14 potential pilot participants, close to the target goal of 15 participants.

2) What type of Electric Vehicle would you most likely purchase?

- Battery EV (i.e. Nissan Leaf, Chevrolet Bolt, various Tesla models) 63%
- Plug-In Hybrid EV (i.e. Prius Prime, Chevrolet Volt) 38%
- Results are favourable with program objectives as data analysis is aimed at studying B-EVs, which are more likely to utilize and depend on charging stations in the facility.

3) How likely are you to purchase a new BEV in the next 8 months to 2 years?

- Not likely: 45%
- Unsure: 22.5%
- Likely: 32.5%
- The percentages increase as the time increases, when compared to question 1. This can be understood in that more people are likely to purchase a B-EV as their next vehicle.

4) If you already own an EV, how often do you utilize your vehicle to commute to the Civic Centre?

- Daily: 12%
- Once/week: 0%
- 2-3 times/week: 5%
- N/A: 83%
- 12% of EV drivers, or 5 respondents, are daily commuters to the Civic Centre. As the number grows, there will be more servicing required, such as the number of chargers to meet the number of EV drivers.



5) If you own an EV, would you charge your vehicle at the Civic Centre if given the opportunity?

- Short commute, no top up charge needed: 18%  
Likely 3 times a week: 19%  
Daily charge top up needed: 33%
- See comment for question 4. The 33% (16 respondents) daily charge needed indicates the distance EV drivers are travelling to and from work. This further advances the proposal to increase the number of EV chargers at the Civic Centre to meet the need and demand. This also meets the project target goal of 15 participants.

6) As a program participant, would you be willing to participate in short surveys (likely no more than 6 over 2 years), focus groups, and feedback meetings (no more than quarterly) to assist in improving and expanding the EV workplace charging initiative?

- Not likely: 43%  
Likely: 57% (27 respondents, including the 5 staff that already drives EVs)
- There is an initial interest and there is a good chance it will grow as EV culture grows, but a significant number is also not interested in participating in the feedback period. The numbers may change after a series of staff engagement to educate and promote awareness of EVs, or an incentive to participate.

7) As a program participant, would you be willing to install and maintain a vehicle data logger during the term of the project? The data logger will give the participant access to detailed, location-based charging and usage history, while also providing the same data for Alectra and program partners for analysis. No personal data will be included in public reports.

- Not likely: 43%  
Likely: 57%
- The numbers remain the same for this question as for question 6. Please see above comments.

8) Would you expect an incentive of free electricity to charge at work to participate in the program?

- Yes: 67%  
No: 33%
- A considerable number of participants would expect some sort of electricity incentive. This doesn't necessarily mean they would not participate if electricity costs were NOT free if all things are considered; i.e., convenience, and other incentives. Program participation may dwindle slightly if there is competition (i.e., free charging) elsewhere close by to the Civic Centre.

## APPENDIX C

### Project Partners – Roles & Contribution

**Schneider Electric** – provider of technical solutions based on its Prosumer microgrid system (DRMS). Alectra interviewed service providers about their experience and ability to provide solutions for the proposed project, with the result that Schneider was invited to participate as a project partner. Schneider Electric will be bringing in significant in-kind support to the project.

**Fleet Carma** - has a unique vehicle telematics technology to provide vehicle state-of-charge that informs smart electric vehicle charging, with deployments in 23 countries, including several projects in Ontario. On account of the uniqueness of the technology, alternative suppliers are not available. Fleet Carma is providing almost 25% of its project value in-kind.

**Util-Assist** - supports utilities to implement solutions that support their business, primarily through metering, data analysis and communication, and customer service. For this project, Util-Assist will provide electricity pricing and demand response signals through an Open ADR connection to the DRMS platform. Util-Assist is also providing project management as an in-kind contribution to the project.

**RBI** - provider of installation services for charging stations at the host facility. Alectra has previously worked with RBI through installations of EVSE at Alectra and Markham Civic Centre. They have also installed equipment for Alectra for the Power.House project. RBI is a partner providing in-kind contributions to the project.

**Navigant** - provider of evaluation of demand shifting. The value of this service will be under \$50,000.

**AddEnergie** - provider of networked charging stations and maintenance for these stations.

**Plug 'N Drive** - provider of customer engagement (both to businesses and individuals) to support participation in the project, and EV driver support for participants. The value of this service will be under \$50,000.

**Eguana Technologies** – provider of electricity battery storage solutions. They will provide all equipment and labour for battery storage, power control systems and inverter and commissioning. The value of this service will be under \$50,000.