

To: Mark Gulbranson  
Deputy Executive Director  
Puget Sound Regional Council  
1011 Western Avenue, Suite 500  
Seattle, WA 98104

From: James L. Nolan  
Interim Executive Director  
Puget Sound Clean Air Agency  
1904 Third Ave. Suite 105  
Seattle, WA 98101

Date: March 10, 2010

Re: **Letter of Agreement Regarding Regional Electric Vehicle  
Infrastructure Project - Data and Mapping Methodology**

INTERIM EXECUTIVE  
DIRECTOR

James L. Nolan

BOARD OF DIRECTORS

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This letter confirms the agreement between the parties, the Puget Sound Clean Air Agency (hereinafter referred to as "the Agency") and the Puget Sound Regional Council (PSRC). The Agency agrees to provide up to \$5000.00 to the PSRC for the purposes of PSRC's implementation of its *Methodology for Identifying Appropriate Locations for Public Charging Stations*, as described below.

### **I. Project Summary**

The central Puget Sound region has a number of grant funded projects that focus on the installation of electric vehicle infrastructure in the year 2010. These include a \$20 million grant to Nissan|eTec (the Electric Transportation Engineering Corporation), a \$15 million grant to the Clean Cities Coalition (a project of the Puget Sound Clean Air Agency), and additional funds to local jurisdictions through federal and state Energy Efficiency Community Block Grant programs. These funds represent the largest investment in electric vehicle infrastructure in our region to date.

The agencies with grant funds are working collaboratively to identify the best locations for charging stations. As such, they seek to inform their individual decision-making processes with technical and data-driven analysis.

Working collaboratively with these agencies, the PSRC developed a *Methodology for Identifying Appropriate Locations for Public Charging Stations*. The project partners have secured a collective total of \$20,000 to reimburse the PSRC for its costs in implementing this methodology, which is described below.

### **II. Methodology for Identifying Appropriate Locations for Public Charging Stations.**

Items A-E below describe the proposed tasks that will be conducted by PSRC and the assumptions PSRC shall use in implementing its Methodology:

**A. Summary of Methodology**

1. PSRC shall create an Electric Vehicle ("EV") user destination zone file:
  - Based on user profile assumptions, PSRC shall identify where potential EV owners might live
  - Based on where EV owners live (origin zones), and some technology assumptions, PSRC shall identify destination zones with a high number and/or proportion of auto trips from the origin zones.
2. PSRC shall create a general attractions zone file:
  - Identify destinations where people are likely to go (and park) for two or more hours. This includes both work destinations and long-dwell non-work (LDNW) destinations.
  - Using various data sources, identify general attraction zones with a high number and/or proportion of work or LDNW destinations.
3. PSRC shall overlay the EV user destination and general attractions zone files, and analyze together with other decision factors and supplemental data sets to identify potential charge locations.
4. PSRC shall use this information to inform a regional EV infrastructure workshop.

**B. PSRC shall use the following Technology Assumptions:**

- Vehicle Price: Based on best knowledge at this point, Nissan Leaf will be the primary vehicle on the road in the next two years. Assume vehicle price similar to fully loaded Prius.
- Driving range: Given different vehicle type battery capacity, anxiety of range, and battery decline issues, assume a conservative driving range of **70 - 80 miles**.
- Public Level II charging stations-number of stations: Assume **1,000 charging stations**. These will be deployed in four-packs or two-packs, meaning there will be a minimum of **250 locations**.
- Public Level II charging stations- minimum charging time: These charging stations will take 4-6 hours to fully charge a battery. Assume users will "top off" their battery, with a minimum dwell time of **2 hours**.
- Public Level III charging stations: Assume **40** charging stations. These will be deployed mostly as two-station sites, meaning there will be an estimated 25 sites (15 sites with 2 charging stations each and 10 sites with 1 charging station). These charging stations will take **30 minutes** to charge a battery to a maximum 80% State of Charge. Assume maximum charge time.
- Home charging station installation costs: Assume installation **costs will be lower** for single family residences with garage or covered parking spaces, than for multifamily residences.

**C. PSRC shall use the following User Profile Assumptions:**

The goal is to identify geographies (precincts, census blocks, tracts, TAZs) where typical EV purchasers might reside. This will be done through an overlay of multiple queries.

- Income: Assume households with **double the median family income**. (Source: 2000 Census data, 2006 Household Survey?)

- Vehicle ownership: Assume households with **more than one vehicle**. (Source: 2000 Census data, 2006 Household Survey?)
- Housing type (single-family and multi-family): Assume households living in a single family dwelling are **more likely to** purchase electric vehicles than those living in multifamily dwellings due to lower home charger installation costs. (Source: 2008 PSRC population & housing estimates)
- \* Hybrid car ownership: Assess whether these can be ascertained through WA State Dept of Licensing data on hybrid vehicle ownership by zip code.
- \* Nissan Leaf Registrants: eTec/Nissan has a list of over 2,000 potential purchasers of the Nissan Leaf. This data will be used to inform and validate the user profile assumptions. This data is available by zip code.
- \* Zip Car parking spot locations: Assess whether Zip Car location criteria are useful.

\* Asterisk denotes potential data sets that PSRC does not hold.

*Product: Through an overlay of these multiple assumptions, PSRC shall identify TAZs where the typical EV owner might live.*

#### **D. Destinations of EV Users**

The goal, for all Charging Stations is to: (A) identify zones where residents identified in the "user profile" section are likely to travel. The goal for Level II Charging Stations is to: (B) identify zones with a high number and/or proportion of destinations where the dwell time duration is greater than the minimum charge time identified in the "technology assumptions" section, which is 2 hours.

##### **Part A:**

- Step 1. PSRC shall identify EV user destination zones: Based on the TAZ file of where the typical EV owner might live (described above), PSRC shall determine where residents of these zones travel to.

*Product: Using PSRC travel model and Household survey data, PSRC shall develop file of destination TAZs with high number and proportions of auto trips from origin TAZs associated with user profile assumptions.*

##### **Part B:**

- Step 2. PSRC shall identify general attraction zones:
  - Using Household Survey and travel model, identification of typical destinations with long dwell times: Using the travel model and household survey data, PSRC shall identify those destinations that have an auto dwell time of greater than 2 hours. These will include work and non-work trips. For both, PSRC shall develop a list of employment categories (NAICS code based) associated with the destinations.
  - PSRC shall review NAICS table in general, and identify additional industries with employment destinations with likely dwell times of 2+ hours.
  - Using 2008 employment estimates, PSRC shall identify zones with a high number and/or proportion of jobs in the selected NAICS industries.
  - PSRC shall supplement the employment data with data on selected facilities/uses that are likely to have a parking or dwell time of greater than 2 hours. For example, parking lots, stadiums, airports, malls.

- Step 3. PSRC shall use other decision factors:
  - PSRC shall overlay the EV destination and general attractions zone files and analyze together with other decision factors and supplemental data sets to identify potential charge locations.
    - Geographic equity
    - Regional growth centers, urban villages
    - Socio-economic equity
    - Other

*Products: PSRC shall create a correspondence table of EV and general attraction TAZs, including facility point locations in selected TAZ's, work trip attractions, long-dwell non-work trip attractions, employment by sector, and parking facility inventory data. PSRC shall overlay attraction zone data with the user destination zone data to make the final data product: Potential EV site TAZ's.*

**Part C:**

- Mapping: PSRC shall develop an initial set of working maps and analysis. Based on input from the project partners, including the Agency, PSRC shall develop final presentation maps for the workshop. PSRC shall bear the cost of printing these maps as part of its contribution to the project.

*Products: PSRC shall create an initial set of working maps. PSRC shall create final presentation maps. PSRC shall provide these maps to the Agency.*

**E. Subsequent Actions**

- Partners, including the Agency, shall participate with PSRC to refine data with site-specific knowledge, customer input, stakeholder input.

**III. Schedule**

- The schedule for this Agreement is for the analysis to begin in late February 2010. It is anticipated that the methodology will take 6 to 8 weeks to implement and will be an iterative process. This will result in final deliverables being available at the end of April. Draft deliverables, such as the data tables and working maps, shall be made available to the Agency earlier.
- The project shall begin with an initial kick-off meeting. A meeting shall be held once the data analysis is completed. A meeting shall be held once the initial set of working maps are developed, and again before the presentation maps are finalized. PSRC shall include the Agency in these meetings.

**IV. Communication**

The following persons shall be the contact person for all communications regarding the performance of this Agreement:

PSRC	Agency
Project Manager: Ivan Miller	Project Manager: Stephanie Meyn
Principal Planner, PSRC	Puget Sound Clean Air Agency
1011 Western Ave, Suite 500 Seattle, WA 98104-1035	1904 Third Avenue, Suite 105 Seattle, WA 98101
Phone: (206) 464-7549	Phone: (206) 689-4055
Fax: (206) 587-4825	Fax: (206) 343-7522
E-mail address: imiller@psrc.org	E-mail address: StephanieM@psc cleanair.org

**V. Compensation**

The total amount paid by the Agency for the work under this Agreement shall not exceed \$5000.00, to be paid upon the Agency's receipt of an invoice from PSRC and upon approval of the invoice by the Agency's Project Manager. PSRC shall send the invoice to:

Stephanie Meyn  
Puget Sound Clean Air Agency  
1904 Third Ave. Suite 105  
Seattle, WA 98101

The funding for this Agreement is provided by the Air Resources Department Reserve Fund and will be integrated into the Puget Sound Clean Cities Coalition work plan for Fiscal Year 2010.

VI. **Changes.** The parties may, from time to time, require changes to this Agreement. The parties shall mutually agree to the changes by written amendment to the Agreement.

VII. **Indemnification.** Each party to this Agreement shall be responsible for its own acts and/or omissions and those of its officers, employees and agents. No party to this Agreement shall be responsible for the acts and/or omissions of entities or individuals not a party to this agreement.

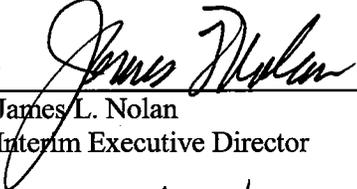
VIII. **Compliance with All Laws and Regulations.** The parties shall comply with all applicable local, state, and federal laws, regulations and standards necessary for the performance of this Agreement.

This Agreement is executed by the persons signing below, who warrant they have the authority to execute the Agreement.

**PUGET SOUND  
CLEAN AIR AGENCY**

**PUGET SOUND REGIONAL  
COUNCIL**

By: \_\_\_\_\_

  
James L. Nolan  
Interim Executive Director

Date: \_\_\_\_\_

3/24/10

By: \_\_\_\_\_

  
Mark Gulbranson  
Deputy Executive Director

Date: \_\_\_\_\_

3/26/2010