

# MADISON STREET BUS RAPID TRANSIT TRACTION POWER SYSTEM SUBSTATION (TPSS)

Winter 2017

## ABOUT MADISON STREET BRT AND TPSS

Madison Street Bus Rapid Transit (BRT) will provide fast, frequent, reliable, and safe public transportation between First Ave in downtown Seattle and Martin Luther King Jr Way in Madison Valley.

New, electric trolley buses will be used on the BRT route and are much quieter than the buses used on Madison St today. To operate the new buses, SDOT will extend the existing overhead wire system. These wires will be powered from a new Traction Power System Substation (TPSS), with a proposed location at the corner of Madison and E John streets.

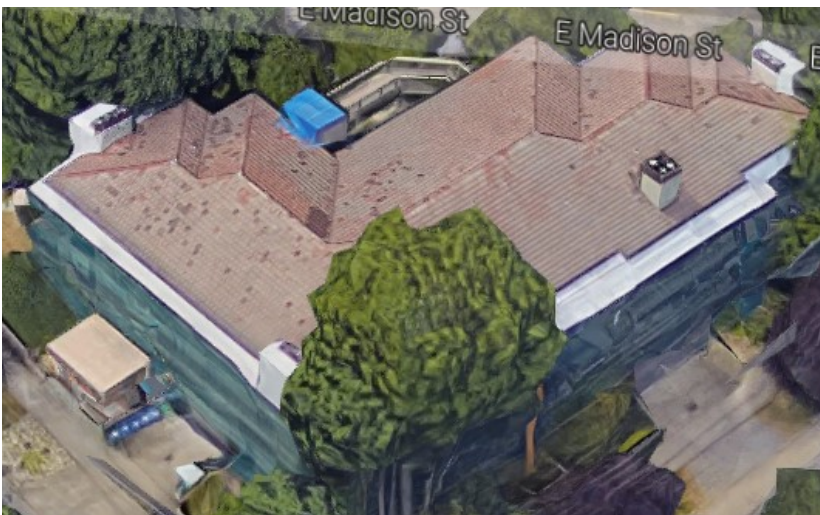
## WHAT YOU NEED TO KNOW

- To power the new, electric trolley buses for Madison Street BRT, a small power supply converter (a TPSS) is needed to convert power from the city's grid for use in the overhead trolley wires. The TPSS will be installed in 2018.
- The proposed location for the TPSS is at Madison and E John streets. The Madison Street BRT team will work with the community to design the TPSS structure to match the look and feel of surrounding structures.
- The TPSS will barely be audible from the sidewalk during the quietest part of the day. A single car driving by is expected to mask the sound of the TPSS.
- Based on studies of electric and magnetic fields (EMF) at similar TPSS facilities, there are no impacts to human health, residential units, or medical implants. EMF levels will be similar to or lower than current levels at the site.

## RECOMMENDED TPSS FACILITY EXTERIOR DESIGN

To blend into the surroundings, the TPSS exterior will be consistent with the look and feel of the existing roof and fence at Madison Parkview Condominiums.

The images at left and below are of the Madison Parkview Condominiums.



WEB : [www.seattle.gov/transportation/MadisonBRT.htm](http://www.seattle.gov/transportation/MadisonBRT.htm)

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# MADISON STREET BRT: TPSS

## FREQUENTLY ASKED QUESTIONS

**Q:** How big will the TPSS be? How will it look?

**A:** TPSS facilities for buses tend to be small—about the size of a residential shed or a bedroom in an average home. The proposed TPSS at Madison and E John streets would match the look and feel of Madison Parkview Condominiums (see front side).

**Q:** What are EMF?

**A:** Electric and magnetic fields, or EMF, are found wherever there is electricity—in household wiring, electrical appliances, in power lines, and overhead trolley lines. Both alternating current (AC) and direct current (DC) sources produce EMF.

**Q:** What EMF levels are anticipated? Will they affect my health or electronics?

**A:** Studies at similar TPSS in Seattle neighborhoods suggest the proposed TPSS will produce EMF less than 500 mG (milligauss; DC measurement).<sup>1</sup> Existing natural conditions at Madison and E John streets are about 533 mG,

which is consistent with normal conditions around Seattle. For comparison, holding a hair dryer 6 inches away produces 300 mG.<sup>2</sup>

Impacts to human health and electronics, including medical devices, are not expected. International Standards limit EMF exposure to the general public at 1,180,000 mG; for medical implants, the guideline is to limit exposure to 5,000 mG (both DC).<sup>1</sup>

**Q:** How noisy will it be? Will I hear static?

**A:** Noise studies at the proposed TPSS location suggest the TPSS will be about as loud as a refrigerator to someone on the sidewalk during the quietest part of the day. A single car driving by on Madison St would mask the sound of the TPSS.

1. Electric Research & Management, Inc. City of Seattle Trolley-Bus Traction Power System Substation (TPSS) Magnetic Field Measurements. December 2016.
2. NIEHS. EMF Questions and Answers. June 2002. As reported at [http://www.pse.com/safety/ElectricSafety/Documents/4243\\_EMF.pdf](http://www.pse.com/safety/ElectricSafety/Documents/4243_EMF.pdf) (accessed 2/7/2017).

## PROPOSED TPSS FACILITY LOCATION

The proposed location for the TPSS facility is the triangular grassy area at the intersection of Madison St and E John St (image below is looking southward).



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