

Transportation Committee

Meeting date: October 24, 2016

For the Metropolitan Council meeting of November 9, 2016

Subject: Traction Power Energy Storage System Construction Contract

District(s), Member(s): District 8 (Letofsky)

Policy/Legal Reference: Council Expenditure Policy 3-3, Procurement of Goods and Services

Staff Prepared/Presented: Brian Lamb, General Manager, 612-349-7510
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Division/Department: Metro Transit Engineering and Facilities

Proposed Action

That the Metropolitan Council authorize the Regional Administrator to negotiate and execute a contract with Egan Company for construction of a Traction Power Energy Storage System at the METRO Blue Line 46th Street substation for a cost of \$1,042,990.

Background

The purpose of the traction power energy storage system (ESS) is to recover braking energy from light rail transit vehicles, reducing Metro Transit's electrical consumption. This emerging technology captures and stores the energy generated by braking trains and applies the stored energy to subsequent train acceleration. In Metro Transit's current operations, an estimated 35% of braking energy is recaptured by other trains near the 46th Street traction power substation, resulting in up to 65% of braking energy dissipated. Installation of the ESS could capture the braking energy that is currently dissipated, recovering up to 511 MWh/year and saving up to \$42,000 in utility costs. These energy savings will reduce operational costs linked to energy processes and lower Metro Transit's contribution to CO₂ emissions and other emissions produced by electric plants. In alignment with the Sustainability outcome of Thrive MSP 2040, this project serves to increase energy efficiency and reduce greenhouse gas emissions from Council operations. In addition, application of this technology now will not only result in reduced energy use, but will pave the way for future installations.

This project was procured with a Request for Proposals to review technical and cost proposals, and projected energy savings to select the best value to the Metropolitan Council. The proposal base option includes installation of one system at the 46th Street Station substation, behind the substation's enclosure wall. The proposal also included options to install up to two more systems along the Blue Line if it proves successful at 46th Street Station.

Four proposals were reviewed by the Evaluation Team. The proposal from Egan Company was determined to be most qualified and in the best interest of the Council, and has passed an OEO review of its proposed DBE participation in the contract.

Rationale

The execution of construction services contracts in excess of \$500,000 requires Council Approval.

Funding

Project funding is authorized and available for the initial installation of this effort within project 69302. Options for up to two additional systems may be exercised at a later date, subject to separate Council and funding capital budget authorization, at a cost of \$1,088,040 each.

Known Support / Opposition

There is no known opposition to this project.

Traction Power Energy Storage System

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Business Item 2016-189

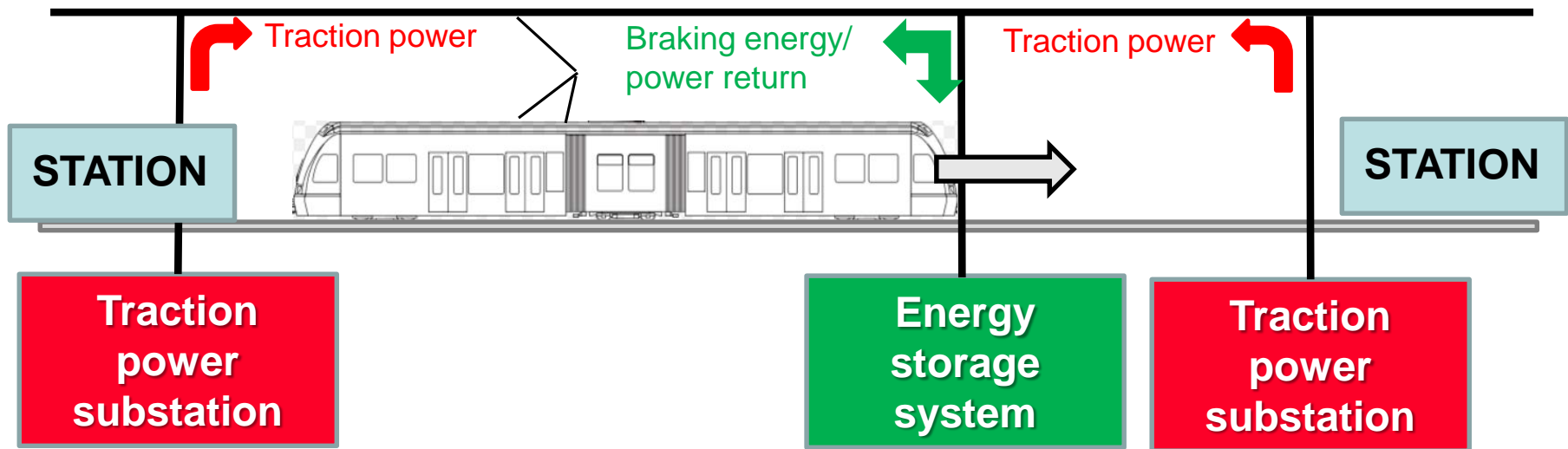
Presented by
Robert Rimstad, P.E.
Metro Transit, Engineering and Facilities

Traction Power Energy Storage System

- Captures and stores energy from braking trains
- Metro Transit vehicles have regenerative braking
 - Bombardier down to 6 mph
 - Siemens down to 1 mph
- Supports Thrive Principals
 - Increase energy efficiency
 - Reduce greenhouse gas emissions from Council operations

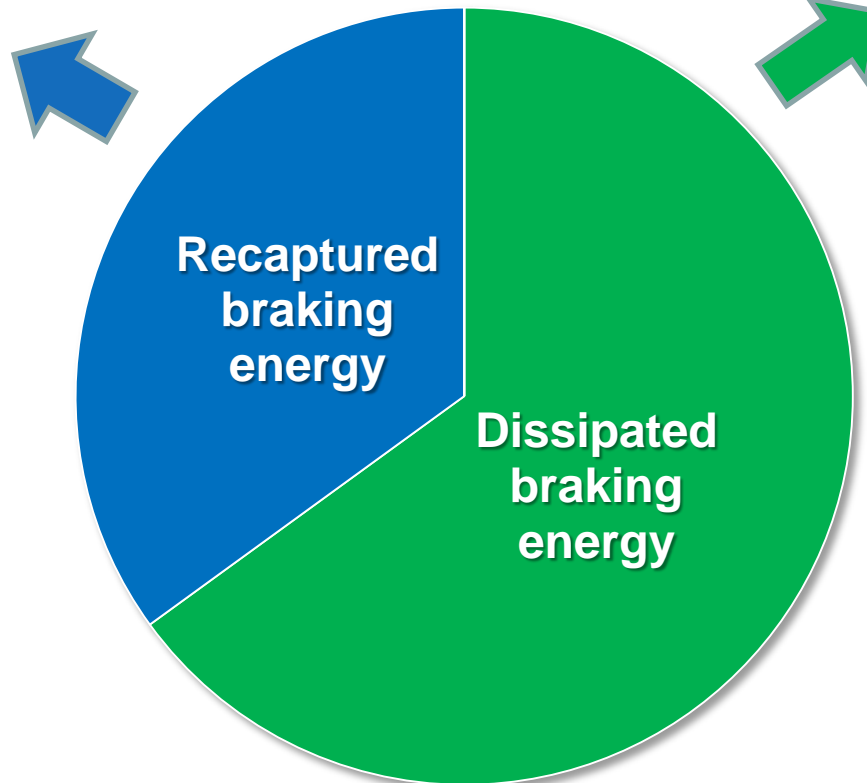


How Energy Storage Systems Work



Regeneration and Energy Recovery

Currently
recapture of
braking energy
estimated at
35% of total
braking energy



Recoverable
excess braking
energy = up to 65%
of total braking
energy

Traction Power Energy Storage System RFP

- RFP to purchase up to three ESSs
 - One pilot system, \$1.04M
 - Options for 2 more, \$1.09M each
- 46th Street substation – pilot site
- Recovered energy – up to 511 MWh/yr
- Operating cost savings – up to \$42,000/yr
- Potential to replace or reduce substations on future lines
- Scalable to test at other locations



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Questions?

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