MEMORANDUM – Description of Transmission and Distribution Potential Model

To: Project Stakeholders

From: Lakin Garth, Cadmus

Subject: Cadmus' Excel Potential Model

Date: June 6, 2017

The purpose of this memo is to provide a brief overview of Cadmus' Excel Potential Model modified to estimate the potential for transmission and distribution (T&D) potential within the state of Minnesota as part of the Statewide Electric Utility Infrastructure (EUI) Energy-Efficiency and Carbon-Saving Potential Study.

Excel Potential Model

Cadmus employs its proprietary, Microsoft Excel-based Excel Potential Model (EPM) to develop baseline energy forecasts and to estimate technical and economic energy-efficiency potential. The model's flexibility allows for the estimation of potential utilizing either a "bottom-up," "top-down," or combined approach to estimate energy efficiency potential depending upon the sectors analyzed, the availability of required data, and client modeling preference. The bottom-up approach is typical for the end-use modeling of technical and economic potentials in the residential and commercial sectors and relies upon developing a baseline end-use forecast using estimates of end use consumption or energy use intensity across an array of equipment. The top-down approach is more typical for estimating potential within industrial and agricultural sectors as it generally relies upon segmenting a sector-level energy forecast into constituent segments and end uses.

For the purposes of this study, Cadmus will employ a top-down approach using its EPM to estimate the potential for T&D energy-efficiency potential as part of the EUI study. We plan to differentiate potential estimates for transmission and distribution as distinct sectors within our model and will determine the appropriate "segments" as we begin the data collection and review tasks. We will rely upon requested load forecasts to develop an overall baseline energy forecast and we will rely upon both requested and secondary data to populate the model prior to estimating potential. We will use the already-developed Minnesota technical resource manual (TRM) measures for measure characterization.