

## DEVELOPMENT OM&A

### 1.0 INTRODUCTION

Development OM&A provides funds for the analysis needed to economically operate and develop the distribution system as necessary to meet existing and anticipated load and generation demands, while maintaining delivery system reliability. As well, Development OM&A ensures that standards are in place to meet distribution construction and planning needs, and legal and regulatory requirements.

### 2.0 DISCUSSION

Development OM&A provides funding for the collection of feeder voltage and current (loading) data and the analysis required to support system expansions, reinforcement and protection requirements. As well, generation connection studies are undertaken to evaluate the impact of connecting new or modified generation projects to the Hydro One distribution system as per the requirements of the Distribution System Code.

The Standards and Technology OM&A program covers the development of new, and the review of existing technical distribution standards. Some revisions to existing standards or the development of new standards, are made in response to compliance requirements set by authorities outside Hydro One Distribution, such as the Electrical Safety Authority (ESA). The Technology portion of the program encompasses Research and Development projects.

The funding for 2008, along with the spending levels for the bridge and historic years are provided in Table 1 below.

**Table 1**  
**Summary of Development OM&A**  
**(\$ Million)**

Description	Historic			Bridge	Test
	2004	2005	2006	2007	2008
Data Collection, Engineering and Technical Studies	2.7	2.0	2.8	5.2	5.2
Standards and Technology	2.8	2.8	1.3	2.8	3.9
<b>TOTAL</b>	<b>5.5</b>	<b>4.8</b>	<b>4.2</b>	<b>8.0</b>	<b>9.1</b>

The increase in overall spending for 2008 relative to historic expenditures is attributed to a need to assess Long Term Load Transfers, added costs to prepare for the increase in generation connections and an increased business need for technical standards and specifications. Additional details are provided further on in this Schedule.

**2.1 Data Collection, Engineering and Technical Studies**

To ensure that up to date and accurate information is available on the operating characteristics of the distribution system, data is collected on an annual basis for use in assessing the adequacy of equipment and supply lines to meet system and customer needs. A portion of the OM&A Development program funds the collection of this data during high load conditions on a sampling basis, using electronic recording ammeters.

Investments in System Capability Reinforcement for lines and stations (Exhibit D1, Tab 3, Schedule 3) are based on system utilization, i.e., voltage and current, and reliability performance information. Distribution Development OM&A also funds studies to determine system capability and reinforcement needs, and thereby, investment levels required to ensure reliable operation of the electrical system. Other studies are needed to ensure compliance with the Distribution System Code and associated supply

1 standards (e.g., voltages maintained within acceptable limits). The program also provides  
2 funding for high-end technical support needed to address customer specific issues in  
3 areas such as power quality investigations. This work is of a continuous and ongoing  
4 nature and is required to avoid deterioration of service.

5  
6 The required number of studies is based on operational and customer issues, and system  
7 performance issues identified through ongoing analysis of the system, equipment and  
8 feeder operating characteristics.

9  
10 An example of activity under this program would be the collection of feeder loading data  
11 with further analysis to identify a distribution feeder that has experienced steady load  
12 growth due to the addition of many small services over time. The feeder loading survey  
13 and analysis of data would identify the issue of a feeder nearing its rated capacity, so that  
14 alternative solutions can be studied with eventual implementation of a preferred plan.

15  
16 The 2008 spending requirement for this program is \$ 5.2 million, and represents a 100%  
17 increase from average historic expenditures. The increase is primarily attributed to three  
18 factors:

- 19
- 20 • Evaluation of Long Term Load Transfers (LTLTs) to comply with the Distribution  
21 System Code requirement that Local Distribution Companies eliminate all LTLTs by  
22 January, 2009.
  - 23 • The need for increased electrical system modeling to prepare for the anticipated  
24 increase in generation connections. Locations selected for modeling are identified by  
25 interested parties as likely locations for wind and other small generation.
  - 26 • Increased analysis of the distribution system to ensure protections function as  
27 intended and are synchronized, to ensure operating conditions remain within  
28 equipment ratings and to address phase imbalance thereby reducing line losses.

1 Reduced funding of this program would result in a lack of data available on which to base  
2 distribution system investment decisions, inability to properly analyze the needs of the  
3 system to meet existing customer and new connection requirements. More specifically,  
4 there would be an inability to meet expected time lines for processing and connecting  
5 new generators. Direct impacts of reduced funding include an increased risk of  
6 electrically overloading system assets and allowing the delivery system performance to  
7 deteriorate, leading to declining reliability for customers and service quality degradation,  
8 e.g., equipment damage, voltage degradation, increased frequency of outages, and  
9 increased outage duration.

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## 11 **2.2 Standards and Technology**

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13 Technical standards form a collection of comprehensive references used as templates and  
14 productivity tools to efficiently and effectively carry out operating, maintenance, and  
15 capital programs. Standards also incorporate company policies and requirements to  
16 ensure compliance with regulations such as the Electrical Safety Code. The collection  
17 includes over 350 planning, design and maintenance specifications, 500 material  
18 specifications and 800 drawings.

19

20 This program covers the development and maintenance of distribution standards, which  
21 are driven by public and worker safety, equipment obsolescence, evolving regulatory  
22 requirements, technological advancements and changes in work methods. Hydro One  
23 Distribution monitors and influences emerging industry standards and requirements for  
24 new standards mainly through its participation in Canadian Standards Association  
25 working groups.

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27 The Technology program provides the funding to monitor, assess the benefits, and  
28 evaluate the feasibility, of emerging technologies, and enable the implementation of new

1 tools and methods. Hydro One Distribution monitors emerging technologies mainly  
2 through its participation in industry interest groups that include CEA Technologies Inc.  
3 (CEATI) and Electric Power Research Institute (EPRI). Where possible, the Technology  
4 program expenditures are leveraged through those interest groups by jointly funding  
5 projects with other utilities that have similar interests or challenges.

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7 The 2008 spending requirement for this program is \$3.9 million, which is 39% greater  
8 than 2004, 2005 and 2007 expenditures. The increases are primarily attributed to the  
9 following:

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- 11 • Added due diligence to document and approve standards and provide technical review  
12 to manage field modifications in order to comply with new ESA requirements.
  - 13 • Added research and development to understand and address the complexities  
14 associated with generation connections and the development of new standards for  
15 generation connections.

16  
17 The lower spending during 2006 was primarily attributed to delays in research and  
18 development work until formal agreements could be reached with the primary vendor.  
19 The delay has also deferred spending for 2007 research and development. As well, 2006  
20 was a transition year for ESA compliance, as such plans were under development but not  
21 implemented and resources had not been fully assigned to the required tasks.

22  
23 Reduced funding would result in the unavailability of sufficient standards to meet  
24 regulatory requirements, construction and planning needs and to effectively deal with  
25 technical issues associated with generation connections. Opportunities to utilize  
26 emerging technologies would be missed with increased longer term costs as a result.