



# Ontario Energy Board

## Filing Requirements for Electricity Transmission and Distribution Applications

### Chapter 5

#### Consolidated Distribution System Plan Filing Requirements

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## Glossary

Where applicable, definitions set out in the Distribution System Code (DSC) apply to terms used in these filing requirements. Certain other terms used here are explained below.

*Distribution System Plan duration* is the duration of a distributor's *Distribution System Plan*, which is a minimum of ten (10) years in total and comprised of an *historical period* and a *forecast period*

*Forecast period* is the last five (5) years of the *Distribution System Plan duration*, consisting of five (5) forecast years, beginning with the Test year

*General plant investments* are modifications, replacements or additions to a distributor's assets that are not part of its distribution system; including land and buildings; tools and equipment; rolling stock and electronic devices and software used to support day to day business and operations activities

*Historical period* is the first five (5) years of the *Distribution System Plan duration*, consisting of five (5) historical years, ending with the Bridge year

*REG investments* accommodate the connection of renewable energy generation (including connection assets, expansions and/or renewable enabling improvements) the costs of which are the responsibility of the distributor as set out in the DSC. REG investments can be stand-alone or integrated into a project/activity; and are to be categorized for the purposes of section 5.4 in the same way as any other investment

*Regional Infrastructure Plan* is a document issued by the transmitter leading a Regional Planning Process that identifies forecast regional electricity service requirements, and describes and justifies the optimal infrastructure investments planned to meet those requirements

*Regional Planning Process* is a consultation involving distributors, transmitter(s), and the Ontario Power Authority convened for the purpose of exchanging information related to system planning, coordinating the modification of a regional electricity transmission system, and preparing and issuing a Regional Infrastructure Plan

*System access investments* are modifications (including asset relocation) to a distributor's distribution system a distributor is obligated to perform to provide a customer (including a generator customer) or group of customers with access to electricity services via the distribution system

*System O&M* are routine operations and maintenance activities carried out to sustain required distribution system performance to the end of the subject asset's service life

*System renewal investments* involve replacing and/or refurbishing system assets to extend the original service life of the assets and thereby maintain the ability of the distributor's distribution system to provide customers with electricity services.

*System service investments* are modifications to a distributor's distribution system to ensure the distribution system continues to meet distributor operational objectives while addressing anticipated future customer electricity service requirements

## 5.0 Introduction

These filing requirements set out the information required by the Board under the renewed regulatory framework for electricity to assess distributor applications involving planned expenditures on distribution system and other infrastructure.<sup>1</sup> For the purposes of these filing requirements, a *Distribution System Plan* (“DS Plan”) consolidates documentation of a distributor’s asset management process and capital expenditure plan, where:

- an *Asset Management Process* is the systematic approach a distributor uses to collect, tabulate and assess information on physical assets, current and future system operating conditions and the distributor’s business and customer service goals and objectives to plan, prioritize and optimize expenditures on system-related modifications, renewal and operations and maintenance, and on general plant facilities, systems and apparatus; and
- a *Capital Expenditure Plan* sets out and robustly justifies according to the Board’s standard requirements for evaluation a distributor’s proposed expenditures on its distribution system and (non-system) general plant over a five-year planning period, including investment and asset-related maintenance expenditures.

Filing DS Plans consistent with these requirements will ensure that the Board’s expectations for a distributor’s planning are met; namely, that the DS Plan optimizes investments and reflects regional and smart grid considerations; serves present and future customers; places a greater focus on delivering value for money; aligns the interests of the distributor with those of customers; and supports the achievement of public policy objectives.<sup>2</sup>

Good distributor planning is an essential pre-requisite to the performance-based rate-setting approaches established under the renewed regulatory framework for electricity<sup>3</sup>, and necessary to ensure that the performance outcomes the Board has established for electricity distributors are being achieved:

*Customer Focus:* services are provided in a manner that responds to identified customer preferences;

*Operational Effectiveness:* continuous improvement in productivity and cost performance is achieved; and utilities deliver on system reliability and quality objectives;

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<sup>1</sup> The renewed regulatory framework for electricity is a comprehensive, performance-based approach to regulation that is based on the achievement of outcomes that ensure that Ontario’s electricity system provides value for money for customers. See [Report of the Board – A Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach](#); (the “RRFE Report”); p. 2.

<sup>2</sup> RRFE Report, p. 1.

<sup>4</sup> RRFE Report, p. 36.

*Public Policy Responsiveness:* utilities deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board); and

*Financial Performance:* financial viability is maintained; and savings from operational effectiveness are sustainable.

DS Plan filings must enable the Board to assess whether and how a distributor has planned to deliver value to customers. One of the primary goals of DS Plans and by extension, hallmarks of good planning, is pacing and prioritizing capital investments in a manner that considers rate impacts. To facilitate the achievement of this goal, these filing requirements focus on the qualitative and quantitative information distributors can use to support their investment proposals that will best enable the Board to assess how a distributor has sought to control the costs and related rate impacts of proposed investments.<sup>4</sup>

### **5.0.1 Purpose of filing a Distribution System Plan**

Good distributor planning is an essential pre-requisite to the performance-based rate-setting approaches established under the renewed regulatory framework for electricity. Filing a DS Plan with an application to the Board will provide information to the Board and interested stakeholders including but not necessarily limited to a distributor's:

- asset related performance objectives and approach to evaluating its performance relative to those objectives;
- approach to lifecycle asset management planning and the management of asset-related operational and financial risk; and
- plan for capital-related expenditures over the five-year forecast period.

### **5.0.2 Application and scope**

These filing requirements apply to licenced, rate regulated electricity distribution utilities in Ontario when filing DS Plans as required by the Board as set out in section 5.1.3 of these requirements.

### **5.0.3 Framework for distribution system plans**

The content of these filing requirements has been informed by the Board's expectations for distribution system planning under the renewed regulatory framework for electricity.

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<sup>4</sup> *RRFE Report*, p. 36.

### 5.0.3.1 Integrated planning

An integrated approach to planning, whereby investments for system renewal and expansion, renewable generation connections, smart grid development and implementation, and regionally planned infrastructure are planned and optimized together, will provide the necessary foundation for distribution rate-setting under the renewed regulatory framework; help distributors to pace and prioritize projects; and support the achievement of the four outcomes for electricity distributors.<sup>5</sup>

### 5.0.3.2 Longer term planning horizon

Under the renewed regulatory framework, a planning horizon of five years is required to support integrated planning and better align distributor planning cycles with rate-setting cycles, which are a minimum of five-years in expected duration.<sup>6</sup> This longer term approach should:

- enhance the predictability necessary to facilitate planning – including regional planning – and decision-making by customers and distributors;
- facilitate the cost-effective and efficient implementation of distributor DS Plans and thereby the achievement of customer service and cost performance outcomes; and
- help distributors to manage consumer rate impacts.<sup>7</sup>

### 5.0.3.3 Regional considerations

Planning the distribution system infrastructure in a regional context will help promote the cost effective development of electricity infrastructure in Ontario. Regional issues and requirements are to be considered in individual distributor system planning processes.<sup>8</sup> Accordingly, these filing requirements provide that where applicable, a distributor file information on the Regional Planning Process(s) in which it was a participant; on the Regional Infrastructure Plan provided by the transmitter; and information demonstrating that the Regional Infrastructure Plan has been appropriately considered and addressed in the development of the distributor's DS Plan.

### 5.0.3.4 Smart grid development and implementation

Under the renewed regulatory framework, smart grid development is expected to be integral to distribution system plans, a central focus of grid-enhancing innovation, and implemented on a coordinated regional basis to achieve economies of scope and

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<sup>5</sup> *RRFE Report*, p. 31.

<sup>6</sup> *RRFE Report*, p. 31.

<sup>7</sup> *RRFE Report*, p. 10.

<sup>8</sup> *RRFE Report*, p. 39.

scale.<sup>9</sup> These filing requirements therefore include DS Plan information regarding, where appropriate:

- the activities a distributor has undertaken in order to understand their customers' preferences (e.g., data access and visibility, participating in distributed generation, and load management) and how they have addressed those preferences;
- the options a distributor has considered for facilitating customer access to consumption data in an electronic format;
- the mechanisms that facilitate “real-time” data access and “behind the meter” services and applications that a distributor has considered for the purpose of providing customers with the ability to make decisions affecting their electricity costs;
- the consideration a distributor has given to the investments necessary to facilitate the integration of distributed generation and more complex loads (e.g., customers with self-generation and/or storage capability);
- the technology-enabling opportunities a distributor has considered regarding operational efficiencies and improved asset management; and
- the distributor's awareness and adoption of innovative processes, services, business models, and technologies.<sup>10</sup>

#### 5.0.4 The Board's evaluation of DS Plans

DS Plan filings must support the Board's assessment as to whether a distributor has and will continue to achieve the four performance outcomes the Board has established for electricity distributors as explained below. Section 5.4.5 explains the specific criteria the Board will use to evaluate whether a DS Plan and in particular the material<sup>11</sup> projects/activities proposed for cost recovery in a DS Plan address these four outcomes.<sup>12</sup>

##### *Customer Focus*

A DS Plan filing must demonstrate that distribution services are provided in a manner that responds to identified customer preferences. As indicated in the provisions that follow, this is accomplished by providing information on customer engagement to identify preferences; the value proposition the DS Plan represents for customers (economic efficiency and cost-effectiveness); and on the factors relating to customer preferences or input from customers and participants in a Regional Planning Process that were considered in the course of planning investment projects and activities.

<sup>9</sup> See [Report of the Board - Supplemental Report on Smart Grid](#) (EB 2011-0004); February 11, 2013 (the “*Smart Grid Report*”); pp. 4 – 5.

<sup>10</sup> *Smart Grid Report*, pp. 9 – 16.

<sup>11</sup> A project or activity is “material” if the materiality threshold set out in Chapter 2 of the *Filing Requirements for Electricity Transmission and Distribution Applications* is met.

<sup>12</sup> For details on the evaluation criteria and how the Board will use them to evaluate investments, see the *Smart Grid Report*, pp. 17 – 21.

### *Operational Effectiveness*

DS Plans must show that a distributor's asset management and capital expenditure planning processes are designed to identify and take advantage of opportunities for continuous improvements in productivity and cost performance, while delivering on a distributor's explicitly stated system reliability and quality objectives.

### *Public Policy Responsiveness*

A distributor's DS Plan must explain how the expenditure planning process has been integrated and rationalized so as to permit timely and appropriate expenditures in relation to a distributor's government-mandated obligations (e.g., in legislation or regulatory requirements imposed further to Ministerial directives to the Board).

### *Financial Performance*

DS Plans must show that a distributor's financial viability and operational effectiveness will endure over the long term including by sustaining efficiencies gained through prudent capital-related expenditure planning and DS Plan execution.

## **5.0.5 Form of these filing requirements**

To implement the policy objectives of the renewed regulatory framework, filing requirements related to Distribution System Plans, including information on planned investments related to investments to accommodate the connection of renewable energy generation (REG) and/or smart grid development activities and expenditures (see sections 5.1.2 and 5.0.3.4 respectively), have been consolidated in this Chapter 5 of the Board's *Filing Requirements for Electricity Transmission and Distribution Applications (CoS FRs)*. Accordingly, these filing requirements replace the Board's [\*Filing Requirements: Distribution System Plans – Filing under Deemed Conditions of Licence\*](#).

## **5.1 General & Administrative Matters**

The form and the content of these filing requirements reflect the Board's conclusions in relation to distribution infrastructure planning. These filing requirements introduce a standard approach to a distributor's filings of asset management and capital expenditure plan information in support of a rate application.<sup>13</sup> As detailed in section 5.2, distributors filing a corporate 'Asset Management Plan' are expected to include and

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<sup>13</sup> *RRFE Report*, p. 35.



clearly identify in their filings the information set out in these filing requirements, and to use the terminology and formats set out in these filing requirements.<sup>14</sup>

### 5.1.1 Investment Categories

A distributor’s investment projects and activities should be grouped for filing purposes into one of the four investment categories listed below, based on the ‘trigger’ driver of the expenditure, examples of which are provided on Table 1.

**Table 1 – Investment Categories & Example Drivers and Projects/Activities**

	Example Drivers	Example Projects / Activities
system access	customer service requests	<ul style="list-style-type: none"> <li>– new customer connections</li> <li>– modifications to existing customer connections</li> <li>– expansions for customer connections or property development</li> </ul>
	other 3 <sup>rd</sup> party infrastructure development requirements	<ul style="list-style-type: none"> <li>– system modifications for property or infrastructure development (e.g. relocating pole lines for road widening)</li> </ul>
	mandated service obligations (DSC; Cond. of Serv.; etc.)	<ul style="list-style-type: none"> <li>– metering</li> <li>– Long term load transfer</li> </ul>
system renewal	assets/asset systems at end of service life due to: <ul style="list-style-type: none"> <li>– failure</li> <li>– failure risk</li> <li>– substandard performance</li> <li>– high performance risk</li> <li>– functional obsolescence</li> </ul>	<ul style="list-style-type: none"> <li>– programs to refurbish/replace assets or asset systems; e.g. batteries; cable (by type); cable splices; civil works; conductor; elbows &amp; inserts; insulators; poles (by type); physical plant; relays; switchgear; transformers (by type); other equipment (by type)</li> </ul>
system service	expected changes in load that will constrain the ability of the system to provide consistent service delivery	<ul style="list-style-type: none"> <li>– property acquisition</li> <li>– capacity upgrade (by type); e.g. phases; circuits; conductor; voltage; transformation; regulation</li> <li>– line extensions</li> </ul>
	system operational objectives: <ul style="list-style-type: none"> <li>– safety</li> <li>– reliability</li> <li>– power quality</li> <li>– system efficiency</li> <li>– other performance/functionality</li> </ul>	<ul style="list-style-type: none"> <li>– protection &amp; control upgrade; e.g. reclosers; tap changer controls/relays; transfer trip</li> <li>– automation (new/upgrades) by device type/function</li> <li>– SCADA</li> <li>– distribution loss reduction</li> </ul>
general plant <sup>1</sup>	<ul style="list-style-type: none"> <li>– system capital investment support</li> <li>– system maintenance support</li> <li>– business operations efficiency</li> <li>– non-system physical plant</li> </ul>	<ul style="list-style-type: none"> <li>– land acquisition</li> <li>– structures &amp; depreciable improvements</li> <li>– equipment and tools</li> <li>– supplies</li> <li>– finance/admin/billing software &amp; systems</li> <li>– rolling stock</li> <li>– intangibles (e.g. land rights; capital contributions to other utilities)</li> </ul>

Note: 1. Includes only 19## series accounts.

<sup>14</sup> For the Board’s conclusions in relation to consolidating and harmonizing its planning-related filing requirements see *RRFE Report*, p. 31.

- **System access** investments are modifications (including asset relocation) to a distributor's distribution system a distributor is obligated to perform to provide a customer (including a generator customer) or group of customers with access to electricity services via the distribution system
- **System renewal** investments involve replacing and/or refurbishing system assets to extend the original service life of the assets and thereby maintain the ability of the distributor's distribution system to provide customers with electricity services.
- **System service** investments are modifications to a distributor's distribution system to ensure the distribution system continues to meet distributor operational objectives while addressing anticipated future customer electricity service requirements
- **General plant** investments are modifications, replacements or additions to a distributor's assets that are not part of its distribution system; including land and buildings; tools and equipment; rolling stock and electronic devices and software used to support day to day business and operations activities

A project or activity involving two or more 'drivers' associated with different categories should be placed in the category corresponding to the 'trigger' driver. For example, a project triggered by the need to replace end of service life components in a distribution station should be considered a 'system renewal investment, even if in anticipation of future system requirements (a 'system service' driver) the project includes assets rated for a higher voltage and/or capable of handling reverse flows. Note, however (as detailed in section 5.4.5), information on all drivers of a given project or activity should be used to justify proposed capital investments.

### 5.1.2 Investments related to renewable energy generation

Under the renewed regulatory framework, a distributor's investments to accommodate and connect renewable energy generation (i.e. REG investments) are integral to its DS Plan, which includes all costs to connect renewable generation facilities that will be the responsibility of the distributor under the DSC, and are therefore eligible for recovery through the provincial cost recovery mechanism set out in section 79.1 of the *OEB Act*.

### 5.1.3 Time of filing

All distributors are required to file a DS Plan as specified here when filing a cost of service application for the rebasing of their rates under the 4th Generation IR or a Custom IR application. Distributors proposing to use the 'Annual IR Index' method for 2014 rates are not required to use Chapter 5 when filing an application. However, any distributor using the 'Annual IR Index' method must make a Chapter 5 filing within five years of the date of the most recent Board decision approving their rates in a cost of service proceeding; and is required to do so at five year intervals thereafter while using

the Annual IR Index method. The Board may also require a DS Plan to be filed in relation to leave to construct, Incremental Capital Module or Z-factor applications.

## **5.1.4 Planning in consultation with third parties**

### **5.1.4.1 Regional planning and consultations**

Prior to filing a DS Plan and at a time and in a manner to be determined in consultation with the participants in a Regional Planning Process, a distributor must:

1. Provide regionally interconnected distributors (including host and/or embedded where applicable), the transmitter to which the distributor is connected and the OPA (where applicable) with information on:
  - forecast load at existing (and proposed, if any) points of interconnection;
  - forecast renewable generation connections and any planned network investments to accommodate the connections;
  - investments involving smart grid equipment and/or systems that could have an impact on the operation of assets serving the regionally interconnected utilities; and
  - the results of projects or activities involving the study or demonstration of innovative processes, services, business models, or technologies; and on the projects or activities of this nature planned by the distributor over the forecast period.
2. Consult with regionally interconnected distributors (including host and embedded where applicable) and transmitter(s) to which the distributor is connected in preparing their DS Plan.

### **5.1.4.2 Renewable energy generation investments**

Prior to filing a DS Plan, a distributor must:

1. Not less than 60 days (where REG investments are contemplated; 30 days otherwise) in advance of the date the distributor needs to receive the OPA letter for inclusion in an application, a distributor must submit information to the OPA in relation to the REG investments identified in their DS Plan and request in writing that the OPA provide a letter commenting on the information by a date that conforms to the distributor's filing timetable.
2. The Board expects that the OPA comment letter will include:

- the applications it has received from renewable generators through the FIT program for connection in the distributor's service area;
- whether the distributor has consulted with the OPA, or participated in planning meetings with the OPA;
- the potential need for co-ordination with other distributors and/or transmitters or others on implementing elements of the REG investments; and
- whether the REG investments proposed in the DS Plan are consistent with any Regional Infrastructure Plan.

The Board may postpone processing an application where a comment letter from the OPA has not been filed in accordance with this requirement.

### **5.1.5 Performance reporting**

A distributor is to provide information on its performance in relation to its DS Plan as set out in section 5.2.3, including information on the achievement of the operational or other objectives targeted by investments the costs for which were approved in a previous application(s). Through its RRR filing, a distributor is also required to report annually on its performance, including in relation to reliability and any Performance Scorecard metrics established by the Board, including metrics related to asset management and capital expenditure planning as applicable.

## **5.2 Distribution System Plans**

Distributors are encouraged to organize the required information using the section headings indicated. If a distributor's application uses alternative section headings and/or arranges the information in a different order, the distributor shall demonstrate that these requirements are met by providing a table that clearly cross-references the headings/subheadings used in the application as filed to the section headings/subheadings indicated below.

### **5.2.1 Distribution System Plan overview**

This section provides the Board and stakeholders with a high level overview of the information filed in the DS Plan, including but not limited to

- a) key elements of the DS Plan that affect its rates proposal, especially prospective business conditions driving the size and mix of capital investments needed to achieve planning objectives

- b) the sources of cost savings expected to be achieved over the forecast period through good planning and DS Plan execution
- c) the period covered by the DS Plan (historical and forecast years);
- d) an indication of the vintage of the information on investment 'drivers' used to justify investments identified in the application (i.e. the information should be considered "current" as of what date?);
- e) where applicable, an indication of important changes to the distributor's asset management process (e.g. enhanced asset data quality or scope; improved analytic tools; process refinements; etc.) since the last DS Plan filing; and
- f) aspects of the DS Plan that relate to or are contingent upon the outcome of ongoing activities or future events, the nature of the activity (e.g. Regional Planning Process) or event (Board decision on LTLT) and the expected dates by which such outcomes are expected or will be known.

Prior to filing, care should be taken to ensure that summary information is consistent with the detailed information filed in the following sections and elsewhere in the application.

### **5.2.2 Coordinated planning with third parties**

To demonstrate that a distributor has met the Board's expectations in relation to coordinating infrastructure planning with customers, the transmitter, other distributors and/or the OPA or other third parties where appropriate, a distributor must provide:

- a) a description of the consultation(s), including
  - the purpose of the consultation (e.g. Regional Planning Process);
  - whether the distributor initiated the consultation or was invited to participate in it;
  - the other participants in the consultation process (e.g. customers; transmitter; OPA);
  - the nature and prospective timing of the final deliverables (if any) that are expected to result from or otherwise be informed by the consultation(s) (e.g. Regional Infrastructure Plan; Integrated Regional Resource Plan); and
  - an indication of whether the consultation(s) have or are expected to affect the distributor's DS Plan as filed and if so, a brief explanation as to how.
- b) where a final deliverable of the Regional Planning Process is available, the final deliverable; where a final deliverable is expected but not available at the time of filing, information indicating:
  - the role of the distributor in the consultation;
  - the status of the consultation process; and

- where applicable the expected date(s) on which final deliverables are expected to be issued.
- c) the comment letter provided by the OPA in relation to REG investments included in the distributor's DS Plan (see 5.2.4.2), along with any written response to the letter from the distributor, if applicable.

### 5.2.3 Performance measurement for continuous improvement

As mentioned in section 5.0, good distributor planning is an essential element of the Board's performance-based rate-setting approaches. The Board understands that distributors often use certain qualitative assessments and/or quantitative metrics to monitor the quality of their planning process, the efficiency with which their plans are implemented, and/or the extent to which their planning objectives are met. The Board expects that this information is used to improve continuously a distributor's asset management and capital expenditure planning processes.

- a) identify and define the methods and measures (metrics) used to monitor distribution system planning process performance, providing for each a brief description of its purpose, form (e.g. formula if quantitative metric) and motivation (e.g. consumer, legislative, regulatory, corporate). These measures and metrics are expected to address, but need not be limited to:
- customer oriented performance (e.g. consumer bill impacts; reliability; power quality);
  - cost efficiency and effectiveness with respect to planning quality and DS Plan implementation (e.g. physical and financial progress vs. plan; actual vs. planned cost of work completed); and
  - asset and/or system operations performance.
- b) provide a summary of performance and performance trends over the historical period using the methods and measures (metrics/targets) identified and described above. This summary must include historical period data on: 1) all interruptions; and 2) all interruptions excluding loss of supply' for a) the distribution system average interruption frequency index; b) system average interruption duration index; and c) customer average interruption duration index.<sup>15</sup>

Where performance assessments indicate marked adverse deviations from trend or targets (including any established in a previously filed DS Plan), provide a brief explanation and refer to these instances individually when responding to provision 'c)' below.

- c) explain how this information has affected the DS Plan (e.g. objectives; investment priorities; expected outcomes) and has been used to continuously improve the asset management and capital expenditure planning process.

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<sup>15</sup> The data should be calculated as stipulated in section 2.1.4.2 of the Board's [Reporting and Record Keeping Requirements](#).

## 5.3 Asset Management Process

As noted in the Introduction, a distributor's asset management process is the systematic approach used to plan and optimize ongoing capital and operating and maintenance expenditures on its distribution system and general plant. The purpose of the information requirements set out in this section 5.3 is to provide the Board and stakeholders with an understanding of the distributor's asset management process, and the direct links between the process and the expenditure decisions that comprise the distributor's capital investment plan.

### 5.3.1 Asset management process overview

This section provides the Board and stakeholders with a high level overview of the information filed on a distributor's asset management process, including key elements of the process that have informed the preparation of the distributor's capital expenditure plan and therefore are referred to in response to requirements for more detailed information supporting the overall capital expenditure plan, budget allocations to categories of investments, or material projects/activities proposed for recovery in rates. The information provided should include but need not be limited to:

- a) a description of the distributor's asset management objectives and related corporate goals, and the relationships between them; where applicable, show and explain how the distributor ranks asset management objectives for the purpose of prioritizing investments;
- b) information regarding the components (inputs/outputs) of the asset management process used to prepare a capital expenditure plan, identify and briefly explain the data sets, primary process steps, and information flows used by the distributor to identify, select, prioritize and/or pace investments; e.g.
  - asset register
  - asset condition assessment
  - asset capacity utilization/constraint assessment
  - historical period data on customer interruptions caused by equipment failure
  - reliability-based 'worst performing feeder' information and analysis
  - reliability risk/consequence of failure analyses.

Use of a flowchart illustration accompanied by explanatory text is recommended.

### 5.3.2 Overview of assets managed

Appropriate regulatory assessment of DS Plans requires an understanding of the scope and depth of the assets managed by a distributor. Distributors vary in terms of the types of assets managed (e.g. some own high voltage equipment; others do not). Detailed characteristics and data on the assets covered by the asset management process are to be filed, including but not necessarily limited to

- a) a description and explanation of the features of the distribution service area (e.g. urban/rural; temperate/extreme weather; underground/overhead; fast/slow economic growth) pertinent for asset management purposes, highlighting where applicable expectations for the evolution of these features over the forecast period that have affected elements of the DS Plan;
- b) a summary description of the system configuration, including length (km) of underground and overhead systems; number and length of circuits by voltage level; number and capacity of transformer stations;
- c) information (in tables and/or figures) by asset type (where available) on the quantity/years in service profile and condition of the distributor's system assets, including the date(s) the data was compiled; and
- d) an assessment of the degree to which the capacity of existing system assets is utilized relative to planning criteria, referencing the distributor's asset related objectives and targets
  - where cited as a 'driver' of a material investment(s) included in the capital expenditure plan, provide a level of detail sufficient to understand the influence of this factor on the scope and value of the investment.

### 5.3.3 Asset lifecycle optimization policies and practices

An understanding of a distributor's asset lifecycle optimization policies and practices will support the regulatory assessment of system renewal investments and decisions to refurbish rather than replace system assets. Information provided should be sufficient to show the trade-off between spending on new capital (i.e. replacement) and life-extending refurbishment, and should include but need not be limited to:

- a) A description of asset lifecycle optimization policies and practices, including but not necessarily limited to:
  - a description of asset replacement and refurbishment policies, including an explanation of how (e.g. processes; tools) system renewal program spending is optimized, prioritized and scheduled to align with budget envelopes; and how the impact of system renewal investments on routine system O&M is assessed;
  - a description of maintenance planning criteria and assumptions; and



- a description of routine and preventative inspection and maintenance policies, practices and programmes (can include references to the DSC).
- b) A description of asset life cycle risk management policies and practices, assessment methods and approaches to mitigation, including but not necessarily limited to the methods used; types of information inputs and outputs; and how conclusions of risk analyses are used to select and prioritize capital expenditures.

## 5.4 Capital Expenditure Plan

A distributor's DS Plan details the programme of system investment decisions developed on the basis of information derived from its asset management and capital expenditure planning process. It is critical that investments, whether identified by category or by specific project, be justified in whole or in part by reference to specific aspects of that process.

As noted above, a DS Plan must include information on prospective investments over a minimum five year forecast period, beginning with the test year (or initial test year if Customer IR filing), as well as information on investments – planned and actual – over the five year period prior to the initial year of the forecast period.

### 5.4.1 Summary

This section elicits key information about a distributor's capital expenditure plan including, by category (see section 5.1.1), significant projects and activities to be undertaken and their respective key drivers; the relationship between investments in each category and a distributor's objectives and targets; and the primary factors affecting the timing of investment in each category (or of projects within each category, if significant).

The following information should be provided:

- a) information on the capability of the distributor's system to connect new load or generation customers in sufficient detail to convey the basis for the scope and quantum of investments related to this 'driver';
- b) total annual capital expenditures over the forecast period, by investment category (see section 5.4);
- c) a brief description of how for each category of investment, the outputs of the distributor's asset management and capital expenditure planning process have affected capital expenditures in that category and the allocation of the capital budget among categories;
- d) a list and brief description including total capital cost (table format recommended) of material capital expenditure projects/activities, sorted by category;

- e) information related to a Regional Planning Process or contained in a Regional Infrastructure Plan that had a material impact on the distributor's capital expenditure plan, with a brief explanation as to how the information is reflected in the plan;
- f) a brief description of customer engagement activities to obtain information on their preferences and how the results of assessing this information are reflected in the plan;
- g) a brief description of how the distributor expects its system to develop over the next five years, including in relation to load and customer growth, smart grid development and/or the accommodation of forecasted renewable energy generation projects;
- h) a list and brief description including where applicable total capital cost (table format recommended) of projects/activities planned:
  - in response to customer preferences (e.g., data access and visibility; participation in distributed generation; load management);
  - to take advantage of technology-based opportunities to improve operational efficiency, asset management and the integration of distributed generation and complex loads; and
  - to study or demonstrate innovative processes, services, business models, or technologies.

#### **5.4.2 Capital expenditure planning process overview**

The information a distributor should provide includes, but need not be restricted to:

- a) a description of the distributor's capital expenditure planning objectives, planning criteria and assumptions used, explaining relationships with asset management objectives, and including where applicable its outlook and objectives for accommodating the connection of renewable generation facilities;
- b) if not otherwise specified in (a), the distributor's policy on and procedure whereby non-distribution system alternatives to relieving system capacity or operational constraints are considered, including the role of Regional Planning Processes in identifying and assessing alternatives;
- c) a description of the process(es), tools and methods (including where relevant linkages to the distributor's asset management process) used to identify, select, prioritise and pace the execution of projects in each investment category (e.g. analysis of impact of planned capital expenditures on customer bills);
- d) if not otherwise included in c) above, details of the mechanisms used by the distributor to engage customers for the purpose of identifying their needs, priorities and preferences (e.g. surveys, system data analytics, and analyses – by rate class – of customer feedback, inquiries, and complaints); the stages of the planning process at which this information is used; and the aspects of the DS Plan that have been particularly affected by consideration of this information; and

- e) if different from that described above, the method and criteria used to prioritise REG investments in accordance with the planned development of the system, including the impact if any of the distributor's plans to connect distributor-owned renewable generation project(s).

### **5.4.3 System capability assessment for renewable energy generation**

This section provides information on the capability of a distributor's distribution system to accommodate REG, including a summary of the distributor's load and renewable energy generation connection forecast by feeder/substation (where applicable); and information identifying specific network locations where constraints are expected to emerge due to forecast changes in load and/or connected renewable generation capacity.

In relation to renewable or other distributed energy generation connections, the information that must be considered by a distributor and documented in an application (where applicable) includes:

- a) applications from renewable generators over 10kW for connection in the distributor's service area;
- b) the number and the capacity (in MW) of renewable generation connections anticipated over the forecast period based on existing connection applications, information available from the OPA and any other information the distributor has about the potential for renewable generation in its service area (where a distributor has a large service area, or two or more non-contiguous regions included in its service area, a regional breakdown should be provided);
- c) the capacity (MW) of the distributor's distribution system to connect renewable energy generation located within the distributor's service area;
- d) constraints related to the connection of renewable generation, either within the distributor's system or upstream system (host distributor and/or transmitter); and
- e) constraints for an embedded distributor that may result from the connections.

### **5.4.4 Capital expenditure summary**

The purpose of the information filed under this section is to provide the Board and stakeholders with a 'snapshot' of a distributor's capital expenditures over a 10 year period, including five historical years and five forecast years. Note that where a distributor's internal investment planning framework does not align with the investment categories defined here, best efforts are expected to 'map' investments to these categories.

Despite the 'multi-purpose' character of a project or activity, for 'summary' purposes the entire costs of individual projects or activities are to be allocated to one of the four

investment categories on the basis of the primary (i.e. initial or ‘trigger’) driver of the investment. Note, however, that for material projects, a distributor must estimate and allocate costs to the relevant investment categories when providing information to justify the investment, as this assists in understanding the relationship between the costs and benefits attributable to each driver underlying the investment. In any event, the categorization of an individual project or activity for the purposes of these filing requirements should not in any way affect the proper apportionment of project costs as per the DSC.

Table 2 illustrates how information filed under this section includes a distributor’s actual and forecast (i.e. proposed) capital expenditures over the historical and forecast periods. System operations and maintenance (O&M) costs are also shown to reflect the potential impact, if any, of capital expenditures on routine system O&M. Note that ‘Plan’ expenditures over the historical period refer to a distributor’s previous plan for capital expenditures *after* adjustments (if any) occasioned by the Board’s decision on the relevant prior application.

Brief explanatory notes should be provided to explain the factor(s) and/or circumstances underlying marked changes in the share of total investment represented by a given investment category over the forecast period relative to ‘actual’ spending over the historical period. For example, a large expenditure over a relatively short period for a ‘one-off’ project (e.g. a distribution station) can cause a temporary ‘step change’ in category C spending compared to the trend in actual expenditures over the historical period.

While year over year ‘Plan vs. Actual’ variances for individual investment categories are expected, explanatory notes should be provided where

- for any given year “Total” ‘Plan’ vs. ‘Actual’ variances over the historical period are markedly positive or negative; or
- a trend for variances in a given investment category is markedly positive or negative over the historical period.

**Table 2 – Capital Expenditure Summary**

CATEGORY	Historical (previous plan <sup>1</sup> & actual)															Forecast (planned)				
	Test-5			Test-4			Test-3			Test-2			Test-1 <sup>2</sup>			Test	Test+1	Test+2	Test+3	Test+4
	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	\$ '000	\$ '000	\$ '000	\$ '000	\$ '000
	\$ '000	%	\$ '000	%	\$ '000	%	\$ '000	%	\$ '000	%	\$ '000	%	\$ '000	%	\$ '000	\$ '000	\$ '000	\$ '000	\$ '000	
<b>System Access</b>																				
<b>System Renewal</b>																				
<b>System Service</b>																				
<b>General Plant</b>																				
<b>Total</b>																				
<b>System O&amp;M</b>																				

Notes to the Table:

1. Historical “previous plan” data is not required unless a plan has previously been filed
2. Indicate the number of months of ‘actual’ data included in year ‘Test-1’ (normally a ‘bridge’ year):

Explanatory Notes on Variances (complete only if applicable)

Notes on shifts in forecast vs. historical budgets by category
Notes on year over year Plan vs. Actual variances for Total Expenditures
Notes on Plan vs. Actual variance trends for individual expenditure categories

## 5.4.5 Justifying capital expenditures

As indicated in Chapter 1, the onus is on a distributor to provide the data, information and analyses necessary to support the capital-related costs upon which the distributor's rate proposal is based. Filings must enable the Board to assess whether and how a distributor's DS Plan delivers value to customers, including by controlling costs in relation to its proposed investments through appropriate optimization, prioritization and pacing of capital-related expenditures.

### 5.4.5.1 Overall plan

The Board's assessment of DS Plans includes the costs of material projects/activities included in the DS Plan, as well as the costs represented by the respective shares of the overall DS Plan budget allocated to each of the four investment categories. Information to be provided in this section pertains to the latter; the former is addressed in section 5.4.5.2.

To support the overall quantum of investments included in a DS Plan by category, a distributor should include information on:

- comparative expenditures by category over the historical period;
- the forecast impact of system investment on system O&M costs, including on the direction and timing of expected impacts;
- the 'drivers' of investments by category (referencing information provided in response to sections 5.3 and 5.4), including historical trend and expected evolution of each driver over the forecast period (e.g. information on the distributor's asset-related performance and performance targets relevant for each category, referencing information provided in section 5.2.3);
- information related to the distributor's system capability assessment (see section 5.4.3)

### 5.4.5.2 Material investments

The focus of this section is on projects/activities that meet the materiality threshold set out in Chapter 2 of the *Filing Requirements for Electricity Transmission and Distribution Applications*. However, distributors are encouraged in all instances to consider the applicability of these requirements to ensure that all investments proposed for recovery in rates, including those deemed by the applicant to be distinct for any other reason (e.g. unique characteristics; marked divergence from previous trend) are supported by evidence that enables the Board's assessment according to the evaluation criteria set out below. The level of detail characterizing the evidence filed by a distributor to support a given investment project/activity should be proportional to the materiality of the investment.

## **A. General Information on the Project/Activity**

The following information is to be provided for any material project in order to facilitate and understanding of the quantum of the expenditure, timing, and contingencies associated with the project:

- total capital and where applicable, (non-capitalized) O&M costs proposed for recovery in rates
- related customer attachments and load, as applicable
- start date, in-service date and expenditure timing over the planning horizon
- the risks to the completion of the project or activity as planned and the manner in which such risks will be mitigated
- if not evident from Table 2, comparative information on expenditures for equivalent projects/activities over the historical period, where available
- information on total capital and OM&A costs associated with REG investment, if any, included in a project/activity; and a description of how the REG investment is expected to improve the system's ability to accommodate the connection of REG facilities
- where a proposed project requires Leave to Construct approval under Section 92 of the OEB Act, with construction commencing in the test year, the applicant must provide a summary of the evidence for that project consistent with the requirements set out in Chapter 4 of these Filing Requirements (sections 4.3 and 4.4 in particular)

## **B. Evaluation criteria and information requirements for each project/activity**

The Board's evaluation of material investments aligns with the outcomes set out in section 5.0.4. Efficiency, customer value, reliability and safety are the primary criteria for evaluating any material investment; other criteria pertaining specifically to grid modernization will be applied where applicable.

The Board's investment evaluation criteria and the qualitative or quantitative evidence that a distributor can use to demonstrate that an investment is consistent with these criteria are set out below.

### *1. Efficiency, Customer Value, Reliability*

- a) identify the main 'driver' ('trigger') of the project/activity, and where applicable any secondary 'drivers'; related objectives and/or performance targets; and by reference to the distributor's asset management process (section 5.3.1), the source and nature of the information used to justify the investment
- b) indicate the priority of the investment relative to others, giving reasons for assigning this priority that clearly reflect the distributor's approach to identifying, selecting, prioritizing and pacing projects in each investment category described in response to section 5.4.2(c)

- c) using, where applicable, quantitative and/or qualitative analyses of the project and project alternatives involving design, scheduling, funding and/or ownership options (e.g. whole or part ownership solely by or jointly with 3<sup>rd</sup> parties)
- explain the effect of the investment on system operation efficiency and cost-effectiveness
  - the net benefits accruing to customers as a result of the investment
  - the impact of the investment on reliability performance including on the frequency and duration of outages

Where alternatives have been considered and the ranking of a proposed project relative to alternatives has been affected by the imputed value of benefits and costs, these benefits and costs should be described and explained in relation to the proposed project and alternatives.

Where a distributor's choices as to technical design, component characteristics, how the work is carried out, etc. have been affected by a decision to configure a project to meet both a 'trigger' driver and one or more other drivers in a manner that affects cost as well as benefits, these effects should be highlighted.

## 2. *Safety*

Provide information on the effect of the investment on health and safety protections and performance

## 3. *Cyber-security, Privacy*

Where applicable, provide information showing that the investment conforms to all applicable laws, standards and best utility practices pertaining to customer privacy, cyber-security and grid protection

## 4. *Co-ordination, Interoperability*

- a) where applicable, explain how the investment applies recognized standards, referencing co-ordination with utilities, regional planning, and/or links with 3<sup>rd</sup> party providers and/or industry.
- b) describe how the investment potentially enables future technological functionality and/or addresses future operational requirements

## 5. *Economic Development*

Where applicable, describe the effect of the investment on Ontario economic growth and job creation

## 6. *Environmental Benefits:*

Where applicable, describe the effect of the investment on the use of clean technology, conservation and more efficient use of existing technologies



### C. Category-specific requirements for each project/activity

As set out below, category-specific information and analyses should also be used to support a project/activity (or elements thereof as applicable).

- a) System access – projects/activities in this category are driven by statutory, regulatory or other obligations on the part of the distributor to provide customers with access to their distribution system. Most frequently, investments relate to requests by customers for connections or connection modifications, but also include requests from municipal authorities for a distributor to relocate system assets in order to accommodate infrastructure development or modifications. Consequently, investment budgets for this category can vary from one DS Plan to the next depending on business conditions.

In the event that the project involves replacing a distributor's system assets, there may also be asset life-cycle related considerations to the extent that infrastructure is taken out of service prior to the end of its service life and new infrastructure is commissioned.

Information bearing on these issues should therefore be included in a distributor's justification of a project/activity in this category, including (where applicable) but not restricted to:

- factors affecting the timing/priority of implementing the project
- factors relating to customer preferences or input from customers and other third parties
- factors affecting the final cost of the project
- how controllable costs have been minimized
- whether other planning objectives are met by the project or have intentionally been combined into the project and if so, which objectives and why
- whether technically feasible project design and/or implementation options exist, whether these options were considered and if not, why not
- where such options were considered and project decision support tools and methods described in response to section 5.4.2 (c) were used to help identify the proposed option, provide a summary of the results of the analysis, including where applicable:
  - the least cost option: a comparison of the life cycle cost of all options considered (including the proposed project) – over the service life of the proposed project
  - the cost efficient option: a comparison of net project benefits and costs over the service life of the proposed project including:
    - i. a project configured solely to meet the obligation; and

- ii. the proposed project and where considered, technically feasible options to the proposed project that meet the same objectives.
  - where applicable, the results of the ‘final economic evaluation’ carried out as per section 3.2 of the DSC
  - where applicable (e.g. REG investment), information on the nature and magnitude of the system impacts of the project, the costs of any system modifications required to accommodate these impacts and the means by which these costs are to be recovered
- b) System renewal – projects/activities in this category are driven by the relationship between the ability of an asset or asset system to continue to perform at an acceptable standard on a predictable basis on one hand and on the other, the consequences for customers served by the asset(s) of a deterioration of this ability (i.e. “failure”). Generally, the lower the former and/or higher the latter, the more important it becomes to replace or refurbish the asset(s) sooner rather than later.

Hence, a distributor’s discretion over the timing and priority of projects in this category may lessen over time, such as where assets with high consequence of failure are consistently operating outside applicable operating limits. On the other hand, a distributor may have considerable discretion over timing and priority where deteriorating asset condition has little or no impact on performance and the consequences in terms of the number of customers and criticality of service potentially affected by an asset failure are relatively low.

Information bearing on these issues should therefore be included in a distributor’s justification of each sustainment project/activity, including (where applicable) but not restricted to:

- a description of the relationship between the characteristics of the assets targeted by a project and the consequences of asset performance deterioration or failure, referring to
  - the distributor’s asset performance-related operational targets and asset lifecycle optimization policies and practices (i.e. filings in relation to sections 5.2.3 and 5.3.3)
  - information on the condition of the assets relative to their typical life-cycle; and performance record of the assets targeted by the project
  - the number of customers in each customer class potentially affected by a failure of the assets included in the project
  - quantitative customer impacts (e.g. frequency or duration of interruptions or number of customers affected) with associated risk level(s)
  - qualitative customer impacts (e.g. customer satisfaction; customer migration) with associated risk level(s)

- the value of customer impact (e.g. high, medium, low) in terms of the characteristics of customers potentially affected by failure that have a bearing on the criticality and/or cost of failure (e.g. customer classes; customer access to backup service)
  - other factors that may affect the timing of the proposed project, including the rate at which assets are replaced over the forecast period (i.e. investment intensity), where applicable; priority relative to other projects (this and other categories)
  - identify the consequences for system O&M costs, including the implications for system O&M of not implementing the project
  - identification of reliability and or safety factors that may have played a role
  - where applicable and reasonable variation and/or uncertainty in the above factors exists, provide – using the tools and methods described in response to section 5.4.2 (c) – an analysis of project benefits and costs comparing alternatives to the timing of the proposed project, highlighting the trade-offs between rate of expenditure and mitigation of the consequences of asset performance deterioration. Where the ranking of the proposed project relative to the alternatives has been adjusted to account for significant benefits and costs the value of which cannot readily be quantified, these should be described and explained in relation to the proposed project and all alternatives.
  - where the proposed project meets the requirement for ‘like for like’ renewal and has been configured at extra cost to address other distributor planning objectives (e.g. development related objectives), provide – using the tools and methods described in response to section 5.4.2 (c) – an analysis of project benefits and costs comparing a) a project configured solely to meet the requirement; b) the proposed project; and c) technically feasible alternatives to the proposed project that meet the same objectives as the proposed project. Where the ranking of the proposed project relative to alternatives has been adjusted to account for significant benefits and costs the value of which cannot readily be quantified, these should be described and explained in relation to the proposed project and all alternatives.
- c) System service – projects/activities in this category are driven by the distributor’s expectations that evolving customer use of the system may occasion the creation of system capacity constraints or otherwise adversely impact operations in a manner that challenges the distributor’s service delivery standards or objectives. Distributor discretion in relation to investments in this category can be relatively high in terms of both initiating a project and determining the priority and timing of project-related expenditures.

Information used by a distributor to justify projects/activities in this category should include, but need not be restricted to:

- where measurable, an assessment of the benefits of the project for customers in relation to the achievement of the objectives of the investment; express the result

(including where value is in the form of an avoided cost) in terms of cost impact to customers where practicable

- where applicable, information on regional electricity infrastructure requirements identified in a regional planning process that affected the initiation or final configuration of the project; and on the corresponding distribution of the benefits and responsibility for project costs
- description of how advanced technology has been incorporated into the project (if applicable) and including how standards relating to interoperability and cybersecurity have been met.
- identification of any reliability, efficiency, safety and coordination benefits or affects the project will have on the distributor's system
- identifying and explaining the factors affecting implementation timing/priority
- providing, where applicable and using the tools and methods described in response to section 5.4.2 (c), an analysis of project benefits and costs comparing the proposed project to a) doing nothing; and b) technically feasible alternatives to the proposed project considered that meet the same objectives as the proposed project.

Where the ranking of the proposed project relative to alternatives has been adjusted to account for significant benefits and costs the value of which cannot readily be quantified, information should be provided that describes these 'qualitative' factors in relation to the proposed project and all alternatives, and that explains whether and how these factors affected the selection of the proposed project.

- d) General plant – projects/activities in this category are driven by the distributor's evolving requirements for capital to support day to day business and operations activities. Distributor discretion in relation to investments in this category can be relatively high in terms of both initiating a project and determining the priority and timing of project-related expenditures.

Information used by a distributor to justify material projects/activities in this category should include but need not be restricted to:

- the results of quantitative and qualitative analyses (using the tools and methods described in response to section 5.4.2 (c) where applicable) of the proposed project/activity, including assessments of financially feasible options to the proposed project (including the 'do nothing option' where applicable), identifying the (net) benefits of the proposed investment in monetary terms where practicable;
- For projects the capital cost of which substantially exceed the materiality threshold, (e.g. CIS, GIS, new office building) the distributor shall file a thorough business case documenting the justifications for the expenditure, alternatives considered, benefits for customers (short/long term), and impact on distributor costs (short/long term).