

Activity and Program based Benchmarking

Working Group Workshop #3
November 20, 2018

APB Working Group

Purpose

Inform and seek advice on the activities/programs to focus and frameworks for benchmarking

Objectives for Today

- Receive feedback on potential list of activities/programs suitable for benchmarking
- Review APB survey results and discussion paper

Agenda

- | | |
|-------------|---|
| 0930 - 0940 | Recap of Workshop #2 / Agenda for the day |
| 0940 - 1000 | Survey Results |
| 1000 - 1030 | Midgard consulting |
| 1030 - 1045 | BREAK |
| 1045 - 1200 | APB preliminary list recap |
| 1200 - 1245 | LUNCH |
| 1245 - 0145 | Key elements to discuss on framework |
| 0145 – 0200 | Open Discussion |
| 0200 - 0215 | Wrap-up / Next steps |

Introduction

Objectives

- Feedback and discussion on preliminary list of activities/programs.
- Provide an overview of survey results and APB discussion paper.

Topics for Discussion

- Recap of Workshop #2
- Survey Results
- Midgard recommended benchmarking list
- Feedback on Staff's APB preliminary list of activities / programs
- Key Elements of Framework
- Next Steps



Recap of Workshop #2

Overview of what was covered

- Staff's APB preliminary list of activities / programs
- Reporting Issues related to APB
- Benchmarking methods
- Modeling examples for econometric and unit cost

Survey Results – Questions 1 and 2

	Yes	No	Total
Question 1			
a) Do you maintain records for Accumulated Depreciation at the Asset class levels that can be reported? If so, for how many years are these data available? (i.e., each item of PP&E in the 1800 and 1900 accounts series)	11	0	11
b) Can you report annually a fixed asset continuity schedule filed in rate applications (Appendix 2-BA)? If so, for how many years are these data available?	11	0	11
c) Are some assets available for reporting by age or asset condition?	10	1	11
d) Are asset value breakdowns (i.e., by gross and net book value \$ amounts) available for reporting poles in Account 1830 “Poles, Towers and Fixtures”? If so, for how many years are these data available?	9	2	11
Question 2			
Can you provide annually the values for the four DSP categories per the rate applications filing requirements in Chapter 5 (system access, system renewal, system service and general plant)? If so, for how many years are these data available?	11	0	11

Survey Results – Question 3 Scale Variables

	Already have it	Easy to Gather	Difficult to Gather	Very Difficult or Impossible	Total
Question 3					
Scale Variables (to determine impact of drivers on costs)					
MVa of Substation capacity	10	1			11
Km of conductors (OH and UG)	8	2		1	11
Km of route (pole-km) (OH and UG)	6	5			11
Number of line transformers	10	1			11
Total	34	9	0	1	

Survey Results – Question 3 Business Conditions

	Already have it	Easy to Gather	Difficult to Gather	Very Difficult or Impossible	Total
Question 3					
Business Conditions (to determine the degree to which a condition impacts a distributor)					
% of useful life remaining by asset type	5	2	4		11
Asset failures by asset type	2		5	4	11
% of overhead route length with vegetation mature enough to be part of a management program	1	2	3	5	11
% of overhead route length with standard vehicle access	2	3	4	2	11
Total	10	7	16	11	

Survey Results – Question 3 Data for Cost-Volume Analysis

	Already have it	Easy to Gather	Difficult to Gather	Very Difficult or Impossible	Total
Question 3					
Data for Cost-Volume Analysis (to determine the costs for specific programs, for example, poles replacement)					
Km of line charged to Account 5135 "Overhead Distribution Lines & Feeders-Right of Way"	4		2	5	11
Number of poles replaced by type of pole	4	2	2	3	11
Cost of pole replacement by type of pole	5	1	3	2	11
% of poles unplanned	3	1	4	3	11
Km of line installed/replaced by type of line	4		3	4	11
Cost of new line by type of line	4		2	5	11
% of km unplanned	3	1	1	6	11
Number and capacity of new/replaced transformers by type of transformer	5	1	4	1	11
Cost of new transformers by type of transformer	7		2	2	11
% of transformers unplanned	5	1	2	3	11
Total	44	7	25	34	



Survey Results – Summary of Question 3

Percent of Grand Total	Already have it	Easy to Gather	Difficult to Gather	Very Difficult or Impossible	Total
Scale Variables (to determine impact of drivers on costs)	77%	21%	0%	2%	100%
Business Conditions (to determine the degree to which a condition impacts a distributor)	23%	16%	36%	25%	100%
Data for Cost-Volume Analysis (to determine the costs for specific programs, for example, poles replacement)	40%	6%	23%	31%	100%

Midgard Analysis

Review of DSP's from 30 recent rebasing applications

- Quantification of industry spend between the four investment categories
 - System Access, System Renewal, System Service, General Plant
- Identification of drivers common to many LDC's and any unique drivers which could be considered “forward looking”
- Identification of trends in data aggregation and management practices
- Recommendation of programs and/or activities where benchmarking is appropriate and value added

Midgard Analysis

- Majority of industry Capex invested in System Renewal due to equipment demographics & condition
- Common investment themes (sub-categories) within Renewal are
 - Overhead equipment, Underground equipment, Stations equipment, Voltage conversion, Poles/towers/fixtures sustainment
- Major assets identified include
 - Poles, overhead conductor, underground cable, distribution transformers, station switchgear & breakers
- Trend toward renewal based on equipment condition / risk as opposed to solely age

Midgard Analysis

- While non-discretionary nature of System Access investment is common to all LDC's, the growth rate / requests for new services varies greatly
- Common sub-categories include metering, system expansion for new loads, and equipment relocations
- Most major assets in this category are common to System renewal
- Meters are unique to System Access and good benchmarking candidate due to granularity of cost tracking (Account 1860)

Midgard Analysis

- Discretionary nature of System Service investment makes does not make it a good candidate for benchmarking in and of itself
 - However, most major assets are found in System Renewal
- While investment in General Plant is less frequent and less discrete than distribution equipment, there is value in benchmarking the aggregate Capex invested between LDC's
 - Normalization factor load or number of customers will need to be used for effective comparison

Midgard - Recommended Benchmarking Candidates

Asset Categories	Asset Sub-Categories	Ideal Benchmarking Candidates				
		Criteria				
		Common	Material	Discrete	Longevity	Availability
Poles	Wood	X	X	X	X	X
	Concrete		X	X	X	X
	Steel		X	X	X	X
	Composite		X	X	X	X
Conductors	Overhead	X	X	X	X	X
	Underground	X	X	X	X	X
	Submarine		X	X	X	X
Transformers	Pole Top	X	X	X	X	X
	Pad Mounted	X	X	X	X	X
	Vault		X	X	X	X
	Power Transformers \geq 230 kV	X	X	X	X	X
	Power Transformers \geq 115 kV & < 230 kV	X	X	X	X	X
	Power Transformers \geq 69 kV & < 115 kV	X	X	X	X	X
	Power Transformers \geq 44 kV & < 69 kV	X	X	X	X	X
	Power Transformers < 44 kV	X	X	X	X	X

Midgard - Recommended Benchmarking Candidates

Asset Categories	Asset Sub-Categories	Ideal Benchmarking Candidates Criteria				
		Common	Material	Discrete	Longevity	Availability
Switchgear	Circuit Breakers	X	X	X	X	X
	Circuit Reclosers	X	X	X	X	X
	Switches	X	X	X	X	X
	Fuses	X	X	X	X	X
Voltage Regulators	None	X	X	X	X	X
Meters	None	X	X	X		X
General Plant	None	X	X		X	X



Costs Associated with Preliminary List

OM&A	Group 1 Average Costs - OM&A (\$ M)	Capital	Group 1 Average Costs – Gross Capital (\$ M)
Vegetation management (Right of Way)	161	Line renewal/conversion (U/G and O/H)*	322
Billing	124	Poles, Towers and Fixtures	4,713
Meter Expense	81	Transformers (including line transformers)	3,898
Line operation and maintenance	190	Distribution station equipment	1,919
Operation Supervision and Engineering	62	Meters	1,326
Distribution Station Equipment	50	Computer hardware	823
Bad Debt	49	Computer software*	150
Collection	48	New services*	187
Maintenance Poles, Towers and Fixtures	29	System Supervisory Equipment - SCADA	240
System Control/Control Centre Operations*	31		
General Expenses & Administration*	20		
		* Average costs associated with Group 2 Applications	

Costs Associated with Preliminary List

OM&A	Group 1 Average Costs - OM&A (\$ M)	Capital	Group 1 Average Costs – Gross Capital (\$ M)
Vegetation management (Right of Way)	161	Poles, Towers and Fixtures	4,713
Billing	124	Transformers (excludes station transformers)	3,898
Meter Expense	81	Distribution station equipment	1,919
Line operation and maintenance	190	Meters	1,326
Distribution Station Equipment	50		
Maintenance Poles, Towers and Fixtures	29		

Costs Associated with Preliminary List – OM&A

		6 Year Total	6 Year Average	Percentage
Grand Total OM&A	\$1,578,321,285			
Overhead Distribution Lines and Feeders - Right of Way (Vegetation management)		\$963,508,551	\$160,584,759	10%
5135	Overhead Distribution Lines and Feeders - Right of Way	\$963,508,551	\$160,584,759	10.2%
Billing		\$743,072,350	\$123,845,392	8%
5315	Customer Billing	\$743,072,350	\$123,845,392	7.8%
Meters		\$487,383,229	\$81,230,538	5%
5065	Meter Expense	\$233,667,953	\$38,944,659	2.5%
5175	Maintenance of Meters	\$50,275,891	\$8,379,315	0.5%
5310	Meter Reading Expense	\$203,439,385	\$33,906,564	2.1%

Costs Associated with Preliminary List – Capital

		6 Year Total	6 Year Average	Percentage
Gross Capital	\$25,022,216,023			
Poles, Towers and Fixtures		\$28,280,151,247	\$4,713,358,541	19%
1830	Poles, Towers and Fixtures	\$28,280,151,247	\$4,713,358,541	18.8%
Line Transformers		\$23,388,935,138	\$3,898,155,856	16%
1850	Line Transformers	\$23,388,935,138	\$3,898,155,856	15.6%
Distribution Station Equipment (all voltages)		\$11,515,356,951	\$1,919,226,158	8%
1815	Transformer Station Equipment - Normally Primary above 50 kV	\$3,672,520,150	\$612,086,692	2.4%
1820	Distribution Station Equipment - Normally Primary below 50 kV	\$7,842,836,801	\$1,307,139,467	5.2%

Key Elements of the Framework

Bringing together the discussions

- Programs/ Activities
 - Fewer in number (material and significant)
 - Combined with aggregate level (e.g. DSP 4 categories)
- Methodologies
 - Combination of Econometric & Unit Cost
 - The results and the applicability will inform the methodologies in the future.
- Single vs. Multiple scale variables
 - Additional modeling work will inform
- Benchmarking Capex Volumes: $\text{Capex} = \text{Volume} \times (\text{Capex}/\text{Volume})$
 - Consideration to be given volume of capex (e.g. number of poles replaced) since a key issue in rate applications
- APB uses
 - Another tool to inform utilities' efficiency performance and rate applications review
 - e.g. Proportionate review,
- Information requests
 - Leverage/Validate current data submitted
 - New requests will keep in consideration the survey responses

Next Steps

Public consultation

- OEB Staff's APB Discussion Paper
- PEG's APB Report to the OEB
- Midgard's Report on Capital Expenditures / DSP

OEB approval of APB framework

Open Discussion



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Wrap-Up/Next Steps



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