

# Overview of Pepco Undergrounding Study

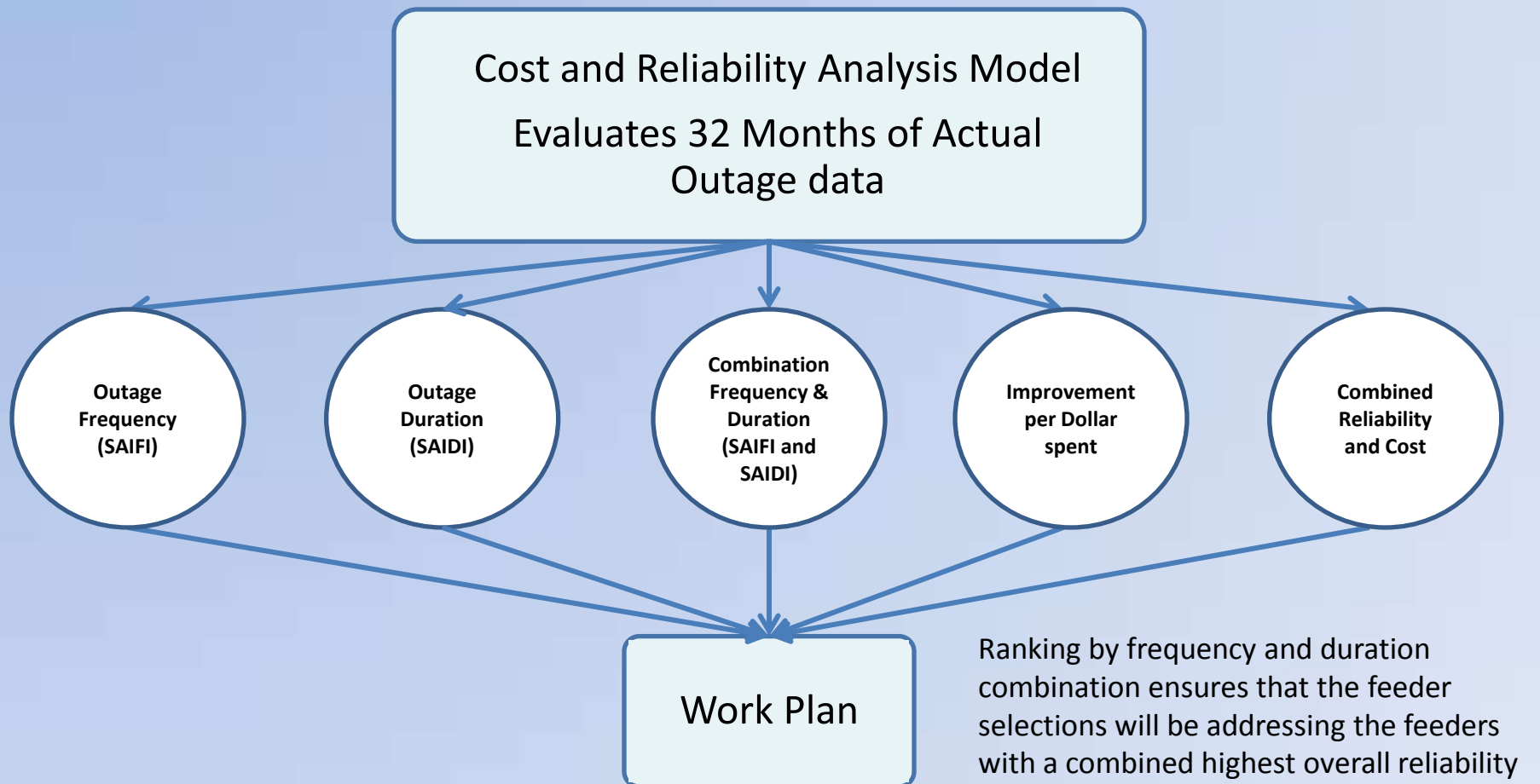
December 19, 2012

# Agenda

- Review Selection Criteria
- Discuss Results of the Study
- Discuss the Impacts of the Different Undergrounding Options
- Identify Open Issues and Next Steps



# Feeder Ranking Options



Ranking by frequency and duration combination ensures that the feeder selections will be addressing the feeders with a combined highest overall reliability improvement and achieve the highest cost per customer minute interruptions benefit

- Using the five different ranking methods just discussed one method must be selected to rank all feeders in priority order.
- This chart shows that ranking by SAIDI produces the highest benefit
- The report includes charts that demonstrate how the ranking of feeders will vary between each of these methods

Ranking comparison as a % of the maximum available value				
	Customer Interruption reduction	Customer Minutes of Interruption reduction	Customer Value Of Service	Total
SAIFI	100%	76%	65%	242%
SAIDI	87%	100%	94%	281%
SAIFISAIDI	96%	88%	70%	254%
CMI/\$	86%	96%	75%	257%
Combined weighted	88%	82%	100%	270%

← Highest benefits

- Selection criteria is reviewed annually and can result in different ranking of feeders.
- Chart demonstrates that regardless of which criteria used there are feeders that are ranked high in all 5 scenarios.
- Recommendation could be to establish a process where feeders can be quickly selected for the first phase of the undergrounding programming.
- This recommendation would identify the areas and feeders to start undergrounding, with approval of the Task Force, and provides time to further evaluate the most appropriate selection criteria to develop longer term multi-year plan
- Feeders that are cross jurisdictional (serve both MD and District customers) would be evaluated during the design phase to identify opportunities to move MD customers to other MD feeders.

Feeder	SAIFI	SAIDI	SAIDISAIFI	CMI/\$	Combined	Total
14007	x	x	x	x	x	5
14136	x	x	x	x	x	5
14758	x	x	x	x	x	5
14769	x	x	x	x	x	5
14890	x	x	x	x	x	5
15199	x	x	x	x	x	5
15707	x	x	x	x	x	5
15801	x	x	x	x	x	5
15943		x	x	x	x	4
14703		x	x	x		3
14767		x		x	x	3
15166	x	x		x		3
15701		x	x	x		3
15705	x		x		x	3
14717	x		x			2
14766		x		x		2
14896	x		x			2
15264		x		x		2
14023					x	1
14093					x	1
14768					x	1
14891		x				1
15172	x					1
15174	x					1

Once a prioritization of feeders has been established you then have to determine what portions of the feeder would be undergrounded. This table shows from a total system view the difference in cost and benefits produced for each option

Results for All Outages as a Percentage of Total

District of Columbia (All Outages Percent of total)	Cost (\$Billions)	Outage Events	Customer Frequency	Customer Duration
1. UG main line w/OH secondary	\$1.96	4%	32%	31%
2. UG laterals w/UG secondary	\$3.38	63%	26%	37%
3. UG main line and laterals w/OH secondary	\$3.08	44%	57%	62%
4. UG main line and laterals w/UG secondary	\$5.21	67%	58%	68%

Results for All Outages as a Percentage of overhead outages

District of Columbia (All Outages Percent of overhead)	Cost (\$Billions)	Outage Events	Customer Frequency	Customer Duration
1. UG main line w/OH secondary	\$1.96	6%	55%	46%
2. UG laterals w/UG secondary	\$3.38	94%	45%	54%
3. UG main line and laterals w/OH secondary	\$3.08	65%	97%	92%
4. UG main line and laterals w/UG secondary	\$5.21	100%	100%	100%

Using the option to underground all of the primary and retain the secondary overhead what are some of the impacts ?

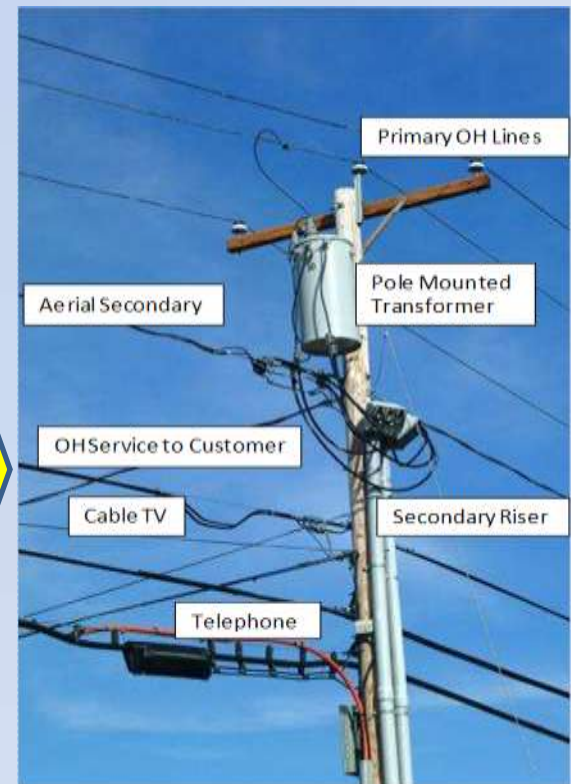
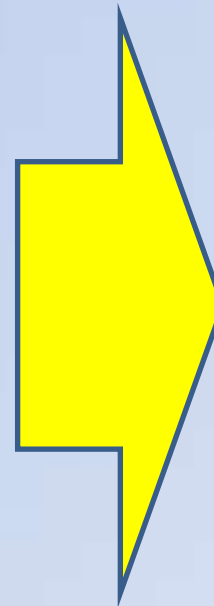
- Selection of undergrounding of primary but not the secondary reduces cost from \$5.21 billion to \$3.08 billion and still achieves the majority of the reliability benefits – 65% fewer outages, 97% improvement in frequency and 92% reduction in duration of outages
- Retaining secondary and services overhead retains the need for poles and therefore no driver to underground communication lines
- Avoids the cost and inconvenience of replacing the service drop to customers homes.

**What is removed**

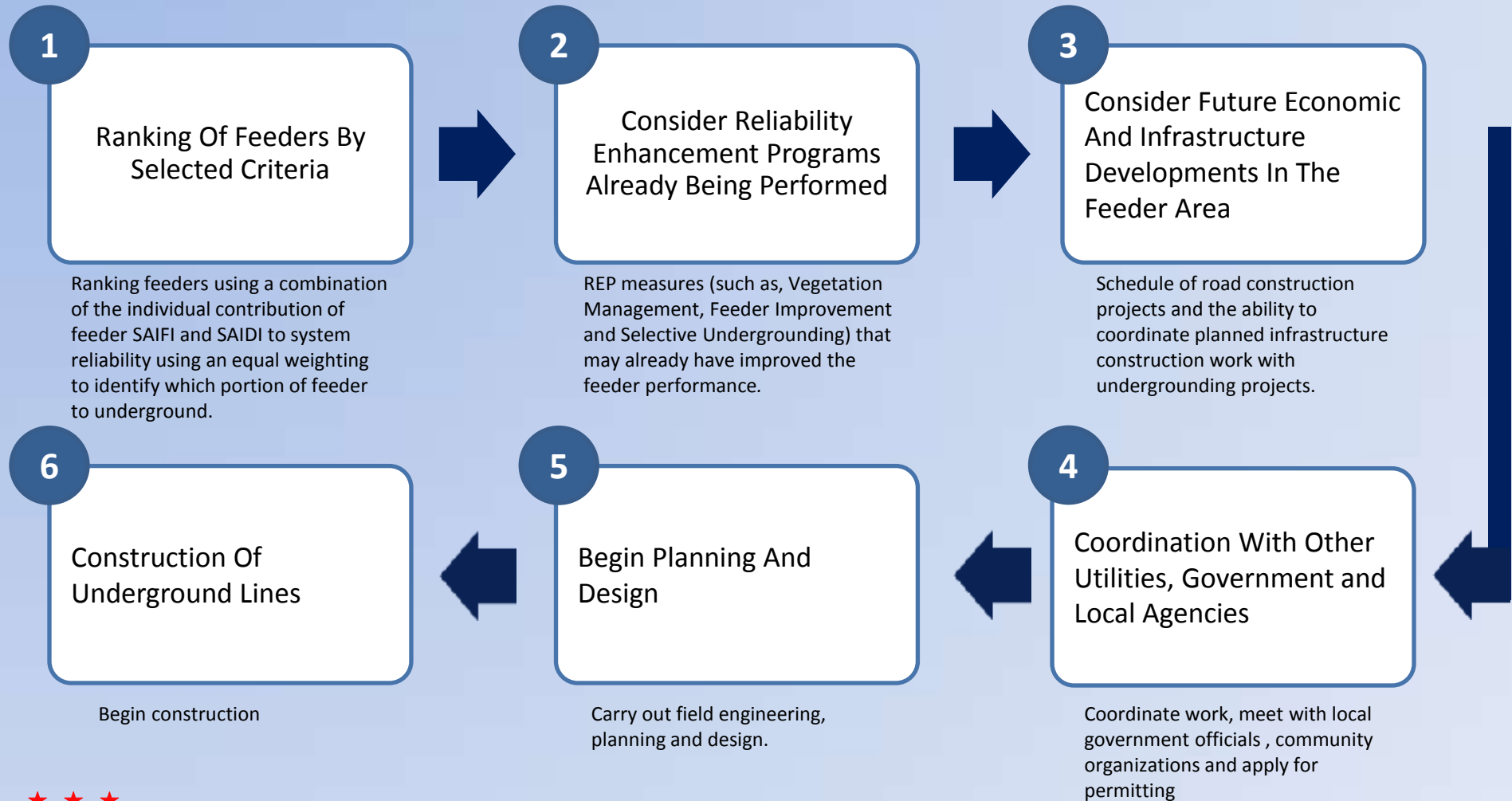
Primary OH Lines  
Pole Mounted transformer

**What remains**

Aerial Secondary  
OH Service to Customer  
Cable TV  
Telephone  
Secondary Riser

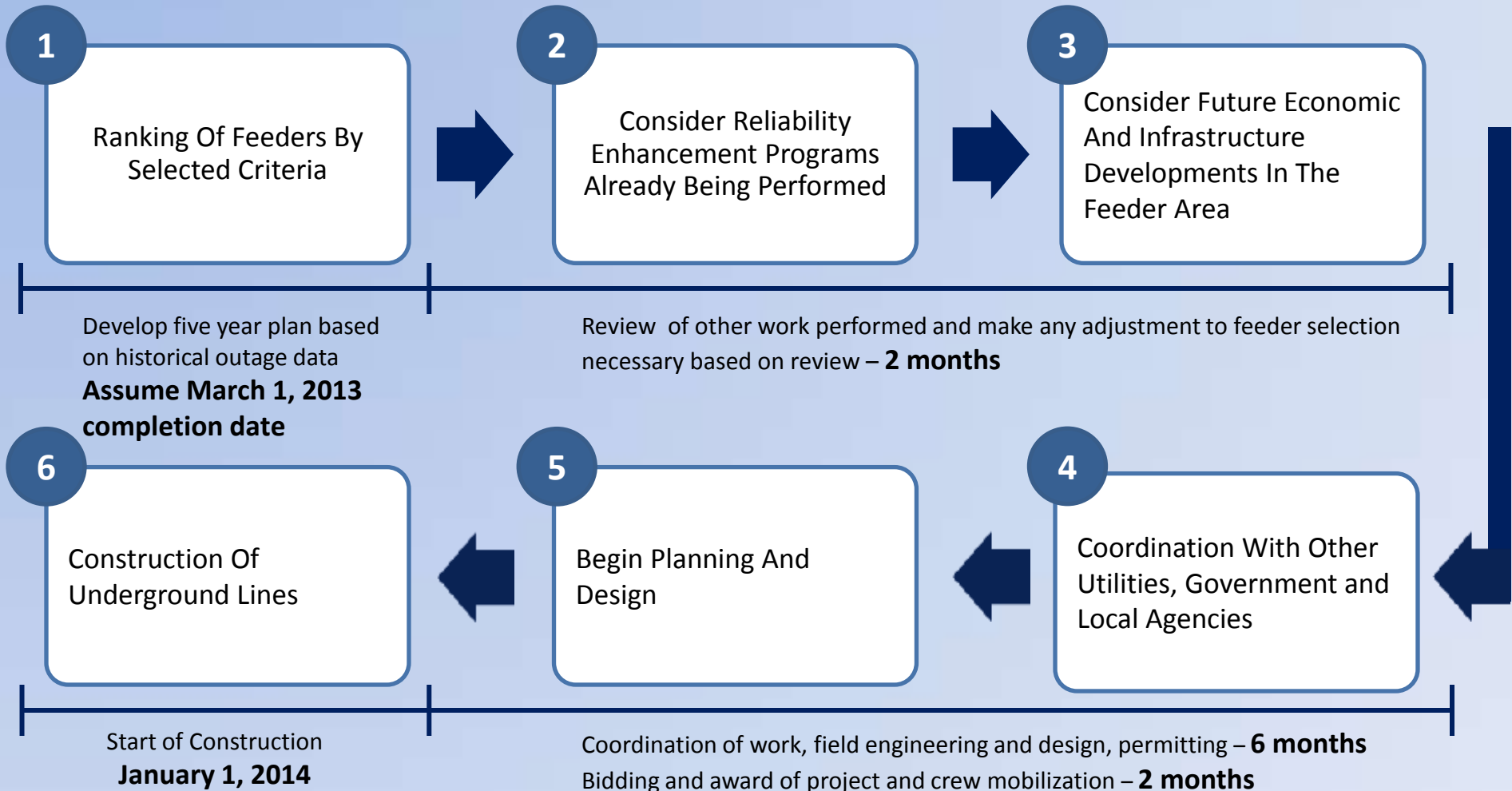


# Ranking and Selection Process





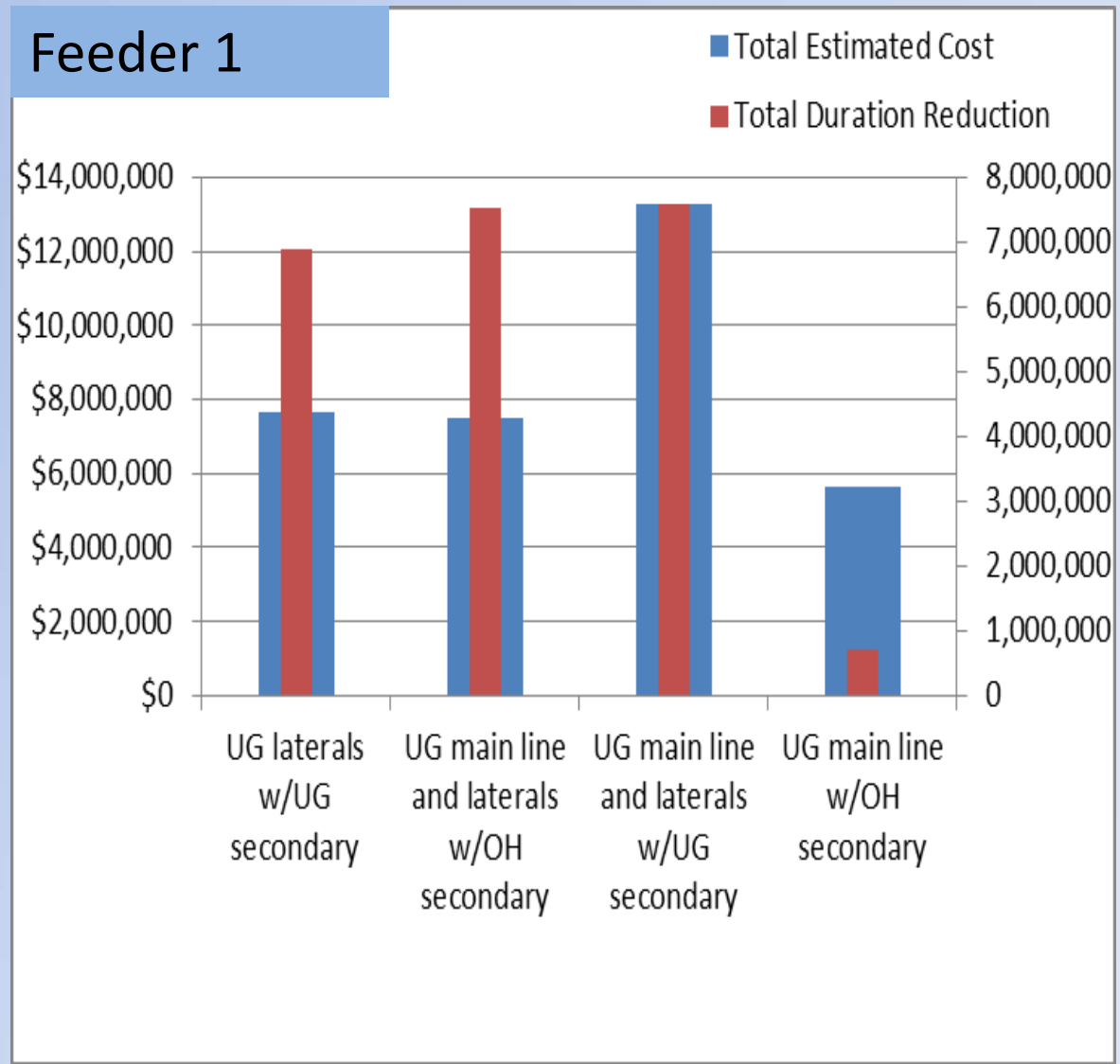
# Timeline for Completion



This chart demonstrates that each feeder needs to be evaluated during the design phase to identify the ultimate recommendation

For this feeder similar cost and benefits can be achieved by undergrounding the laterals and secondary's as compared to undergrounding all of the primary but not the secondary's

The selection model developed by Pepco provides the ability to identify which feeders will produce the greatest benefits from undergrounding



# Open Issues and Next Steps

- Technical committee will continue to review the report and address any questions from its members
- A process needs to be developed to continue to obtain stakeholder input and review of future undergrounding plans
- Are changes needed to existing regulations to require the installation of new or replacement overhead facilities to be underground
- Is the Task Force looking for a phased recommendation where initial areas for undergrounding can be identified and a process established to identify multi-year plan

