# Lowering Asset Life Cycle Spending through Condition Assessment and Extending Asset Life

# Agenda

- Background
- Asset Life Estimations
- Asset Life Cycles
- Condition Assessments
- Is all this Stuff Working???
- Take Away's

# Thunder Bay, ON

- Location
- Population
  - 110,000
- History of development
  - Port Arthur and Fort William
- Tax base

# Asset Management Plan History

- First AMP 2005
- Provincial funding requirement 2013
- Updates 2014, 2015, 2016

# Asset Life Estimations

- Basic estimation of how long this asset is useful
- First tool you need to develop AM plans once you have your assets inventoried
- There are best practices but there is a need to look at how your assets perform locally!

# Effect of Asset Life Estimations

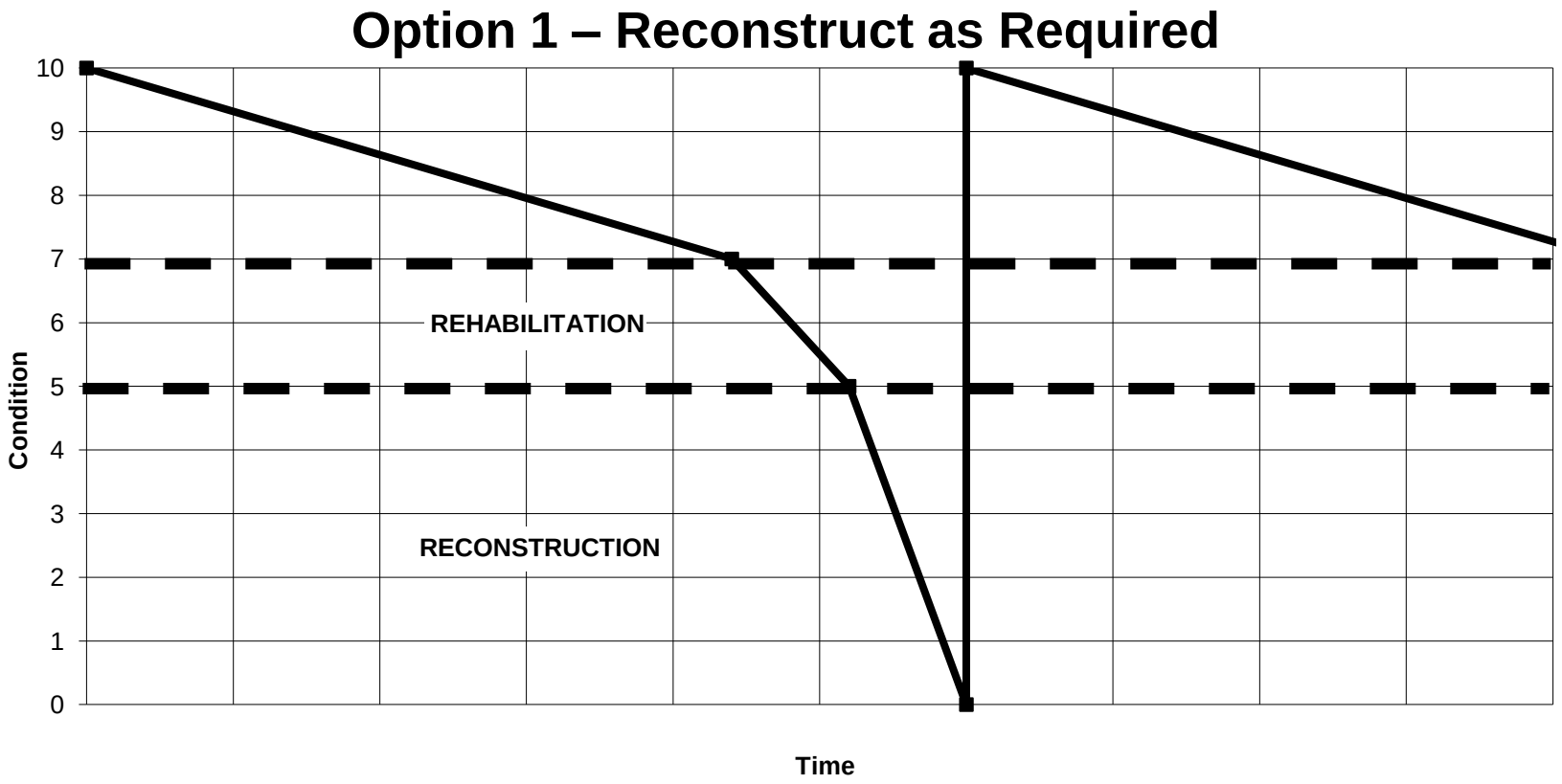
- Looking at Sanitary System
- ~ 500 km of Pipe
- bid analysis data replace costs average $800/m
- Three asset lives:  100 years/125 years/150 years
- @ 100 years - $4M/yr
- @ 125 years - $3.2M/yr
- @ 150 years - $2.7M/yr

# Asset Life Cycles

- Different Asset Life Cycles
- Vary Depending on Infrastructure
- Vary depending on rehab technologies/methodologies available
- What is the effect?

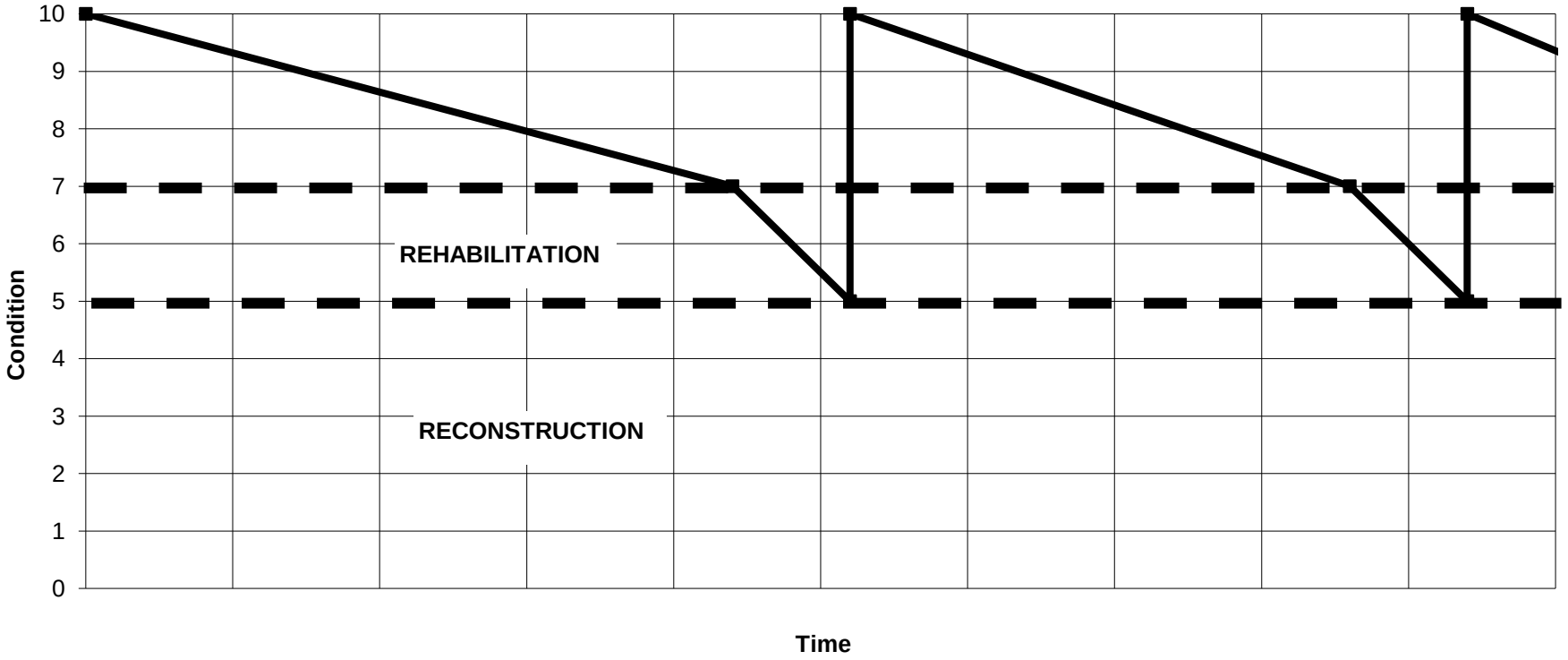
# Effect of Asset Life Cycles

- Look at our Road Network:
- We classify 3 types of Capital Work
  - Minor Rehabilitations (mill and pave, single lift strip or pulverize)
  - Major Rehabilitations (2 lift strip or pulverize, 80 mm + mills)
  - Reconstructions (multiple lifts, rebuilding road base, curb replacement)
- What is the effect of Life Cycle Modelling?



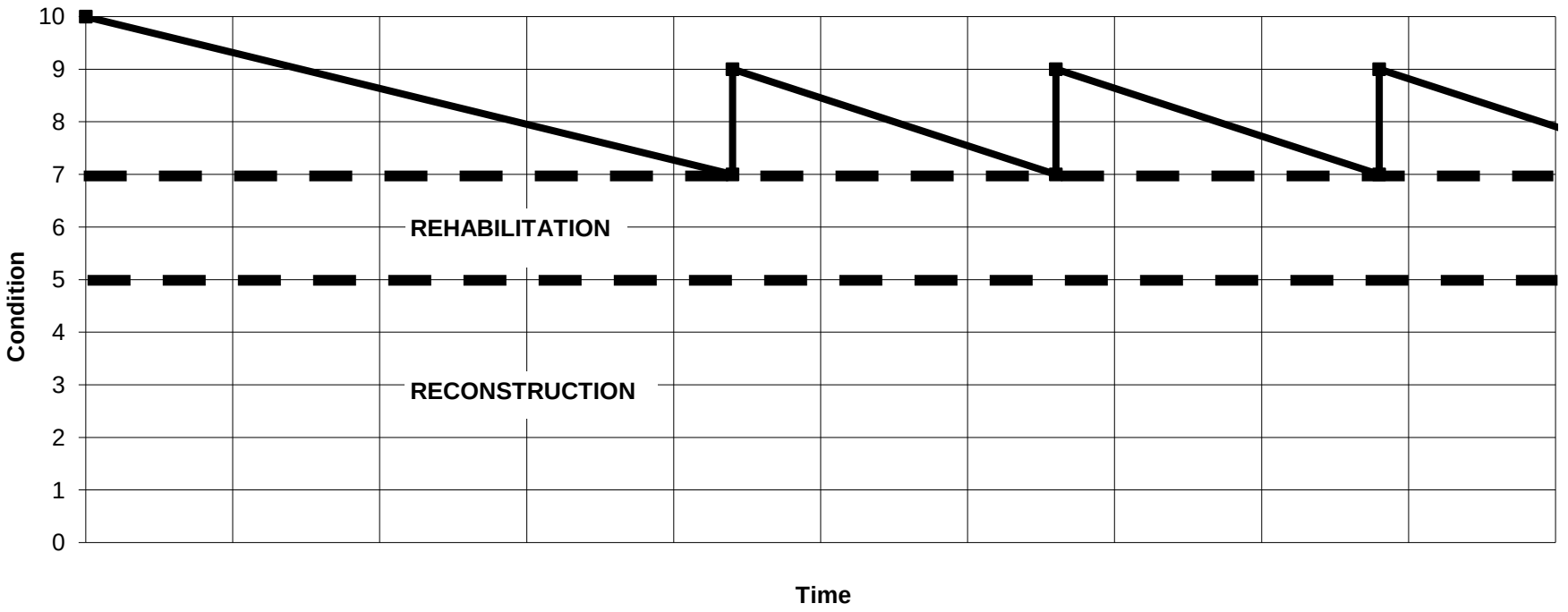

Average Cost/km/yr - ~ $130,000
Average Road Condition - Lowest

# Option 2 - Major Rehabilitation as Required




Average Cost/km/yr - ~ $60,000
Average Road Condition - Middle

# Option 3 - Minor Rehabilitation as Required




Average Cost/km/yr - ~ $50,000
Average Road Condition - Highest

# Condition Assessments

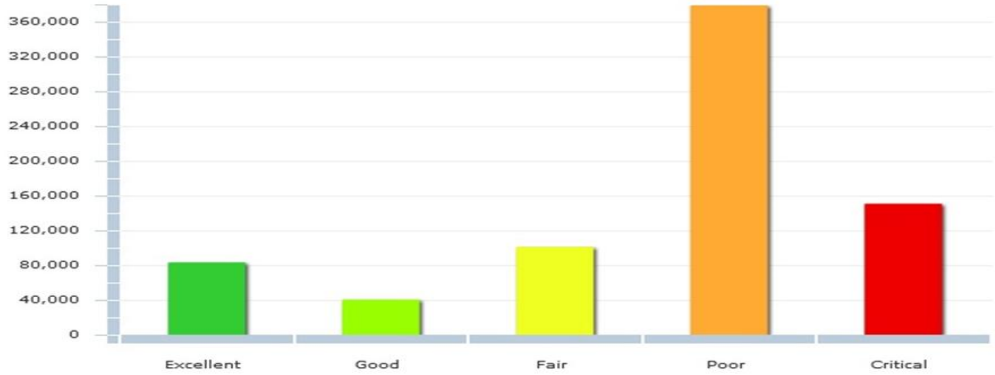
- Where do condition assessments fit in?
- Determine an Accurate Asset Life
- Determine when to intervene with minor and major rehabilitations
- To drill down into short term capital projects
- To see if what we are doing is working

# Effect of Condition Assessments

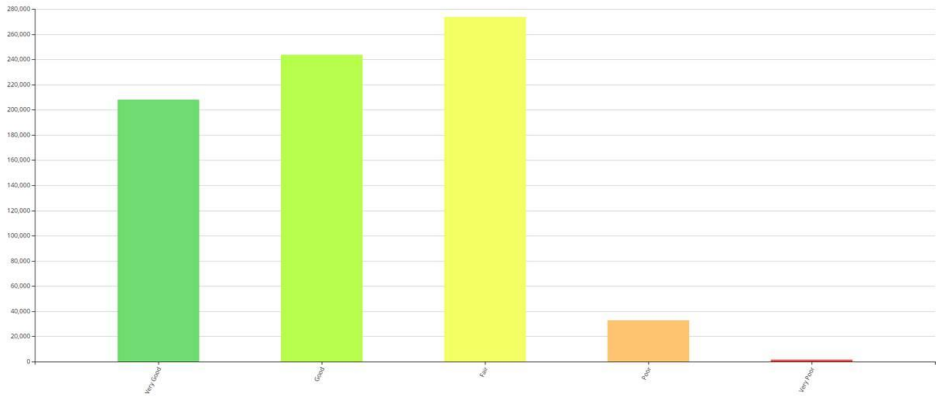
- Condition Assessment Examples
  - Effect of Condition Assessments for Sidewalks
  - Effect of Condition Assessments in our Sanitary Network
  - Effect of Condition Assessments in our Road Network

# Using Condition Assessments - Long Term Planning Sidewalks

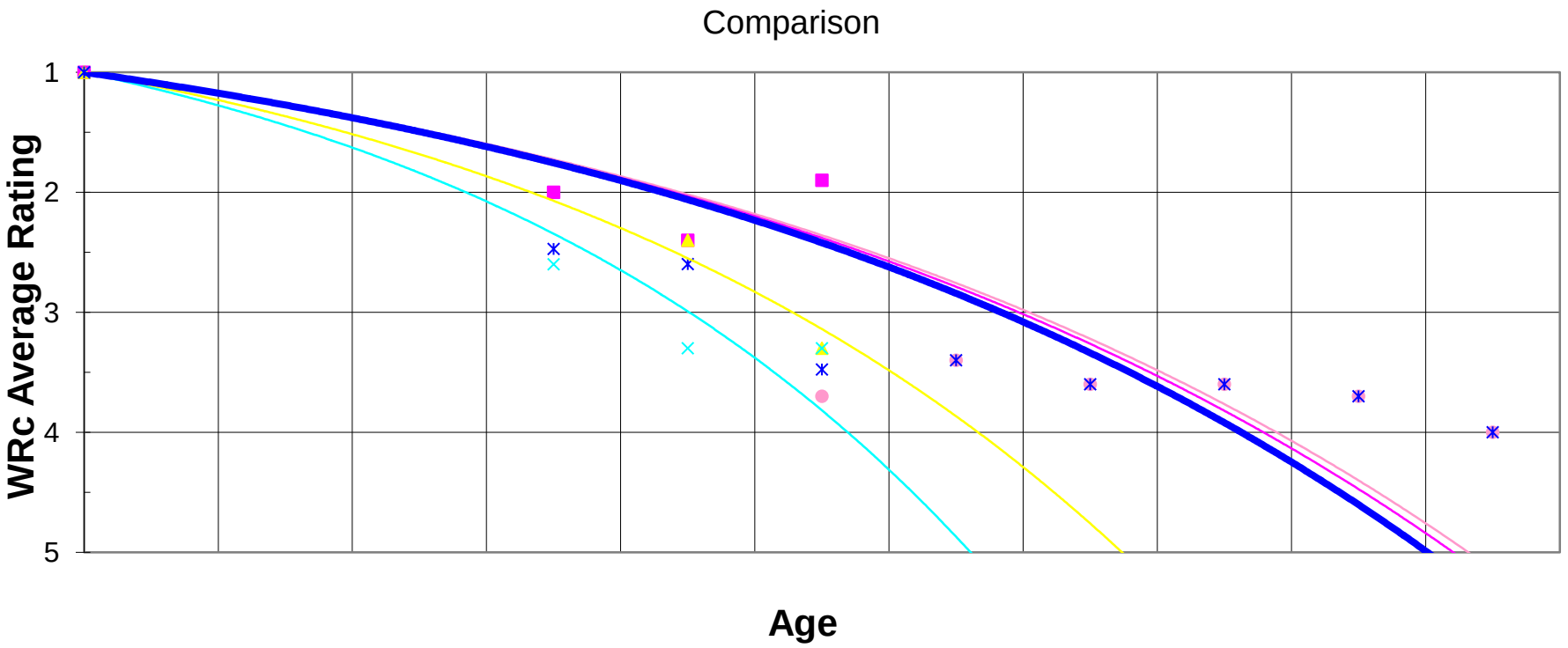
- Age Based Condition of Sidewalk Network



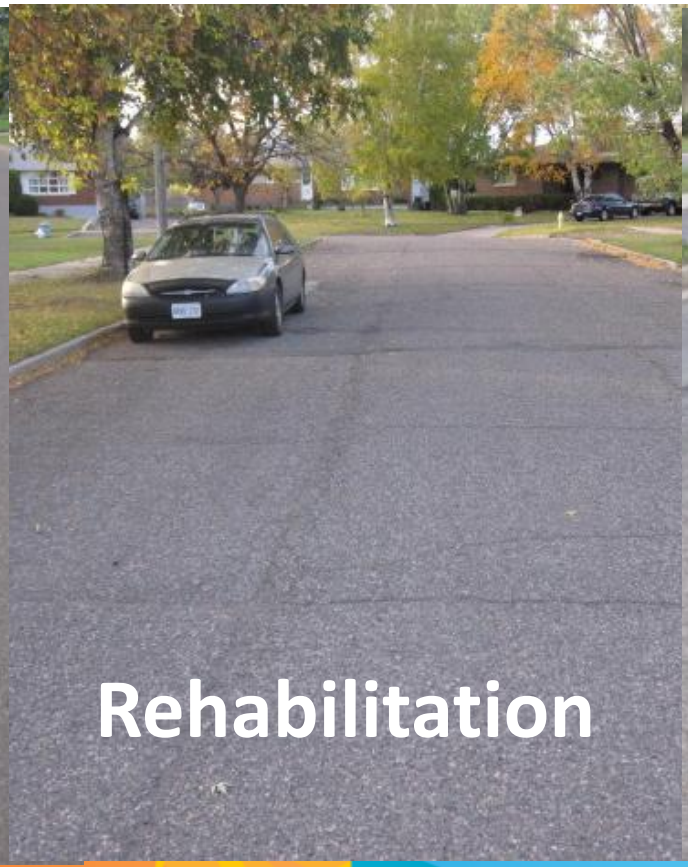

- Inspected Condition of Sidewalk Network



# Using Condition Assessments – Sanitary Sewer Useful Life



# Using Condition Assessments – Pavement Lifecycle Intervention


# Is it Working?

| C | Previous Rating C | Infrastructure Report Card City of Thunder Bay | | | |
|---|---|---|---|---|---|
| ASSET CATEGORY | CONDITION VS PERFORMANCE | | NEEDS VS FUNDING | | COMMENTS |
| OVERALL | C | | D | | |
| Road Network | C | → | D | → | 91 % of the road network is in fair condition or above. Historical spending at 51% of required |
| Sidewalk Network | D | → | F | → | 70% of the sidewalk network is in poor or critical condition. Historical spending at 30% of required funding. |
| Bridges and Culverts | B | → | D | → | 70% of bridges and culverts are in good or excellent condition, with no assets in critical condition. Historical spending at 52% of required funding |
| Water Distribution Network - Linear | C | → | D | ↑ | Approximately 84% of the linear network is in fair to critical condition. 94% of the total value of the water distribution facilities are in good to excellent condition. Historical spending is at 45% of required funding |
| Water Distribution Network - Facilities | A | → | | | |

# Take Aways

- Determine your asset life
- Determine realistic asset life cycles based on what you can do
- Use Condition Assessments refine asset lives, life cycles and plan life extending work
- Integrate work based on varying asset life cycles and asset lives
- Track condition and funding to verify assumptions

# Questions?

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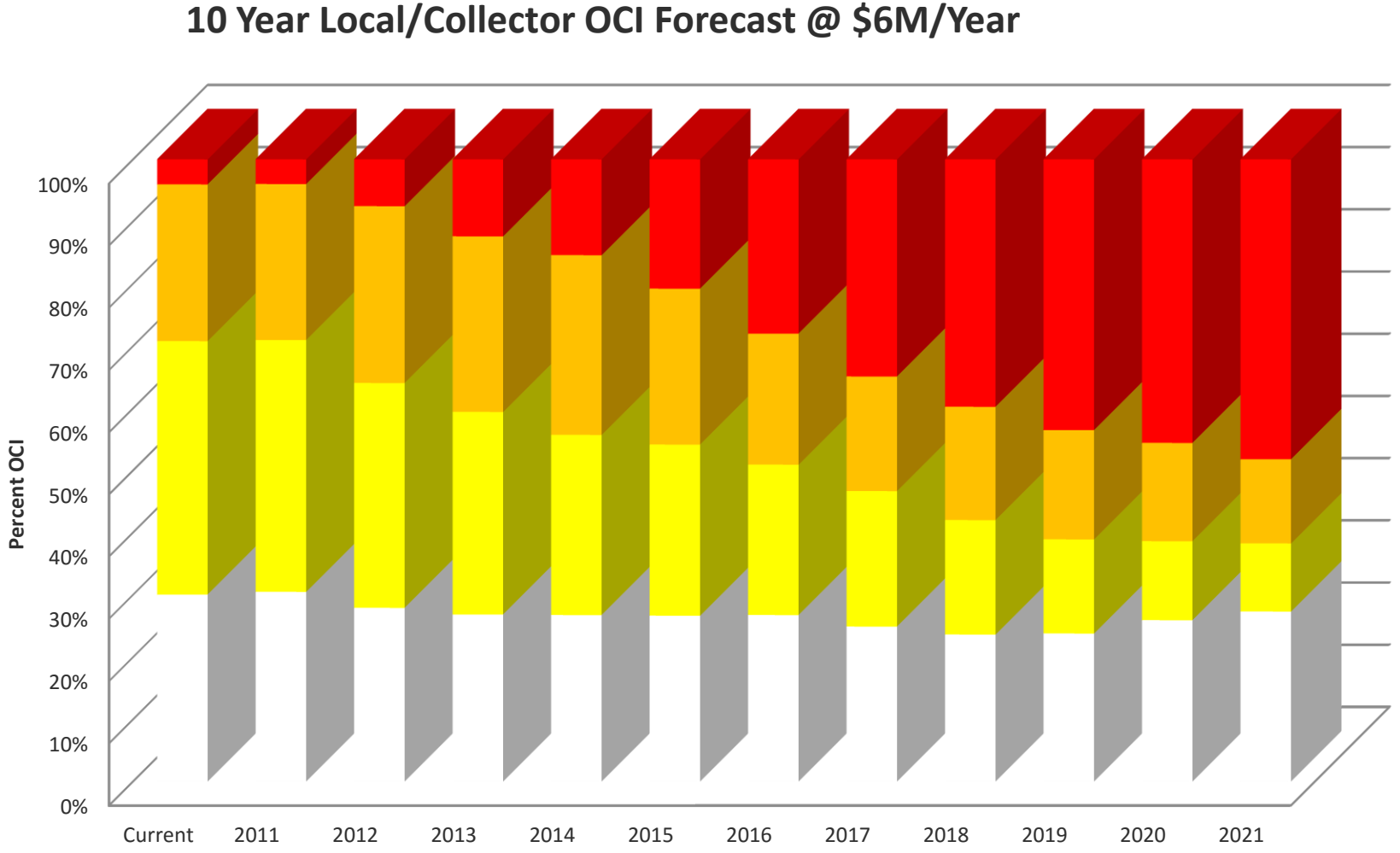
# Lower Budget Number Forecast



# Higher Budget Number Forecast