



Western Washington University  
**Western CEDAR**

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Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference  
(Seattle, Wash.)

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Apr 5th, 10:40 AM - 10:45 AM

## Climate change adaptation planning for Port of Seattle waterfront properties

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Gellings, Joseph, "Climate change adaptation planning for Port of Seattle waterfront properties" (2018). *Salish Sea Ecosystem Conference*. 152.  
<https://cedar.wvu.edu/ssec/2018ssec/allsessions/152>

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# Climate Change Adaptation Strategies

Joseph Gellings, AICP  
SeaWeb Seafood Summit  
June 5, 2017



Port of Seattle  
Where a sustainable world is headed.™



# Port of Seattle Waterfront Properties

## *Mission:*

*The Port of Seattle is a public agency that creates jobs by advancing trade and commerce, promoting industrial growth, and stimulating economic development.*



# Threats -- starting checklist

- Rising temperatures
- Snow pack issues
  - Utility rates
  - Agricultural exports
- Sea level rise / storms
  - Our port terminals
  - Terminals of our trading partners, worldwide



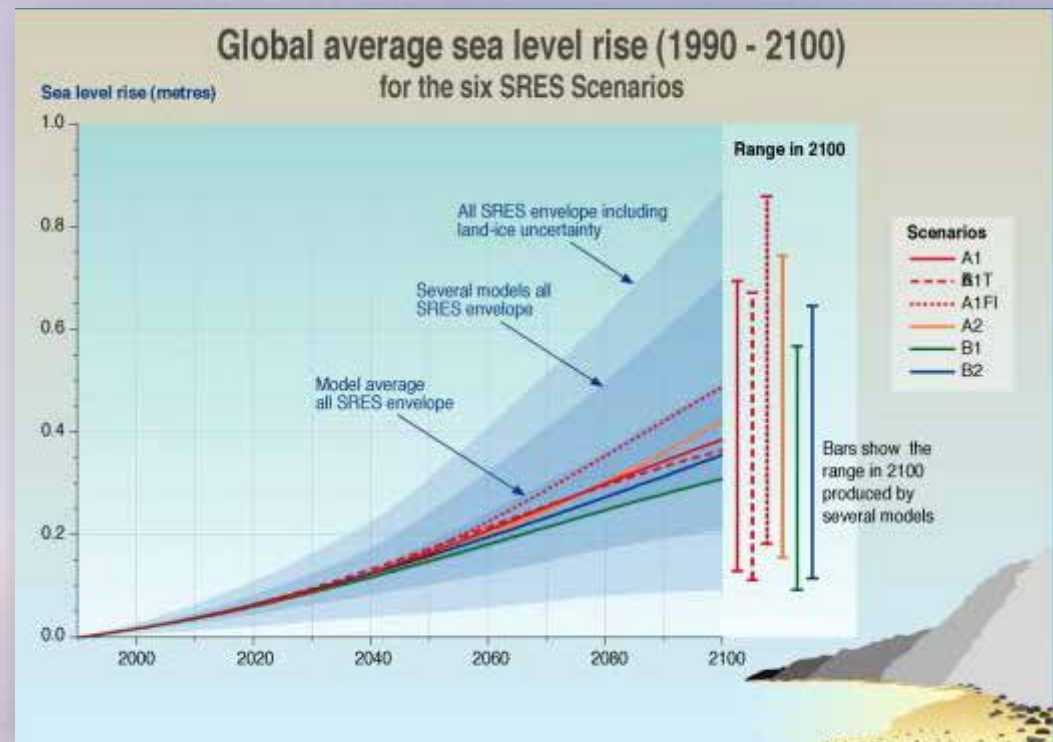
# Threats That Can Be Planned For

- Sea-level rise
- Storm events of greater intensity and greater frequency



# The longer the planning horizon, the greater the uncertainty

- Approach of adaptive management
- Long- and short-range planning horizons



# Sea Level Rise Projections for Puget Sound

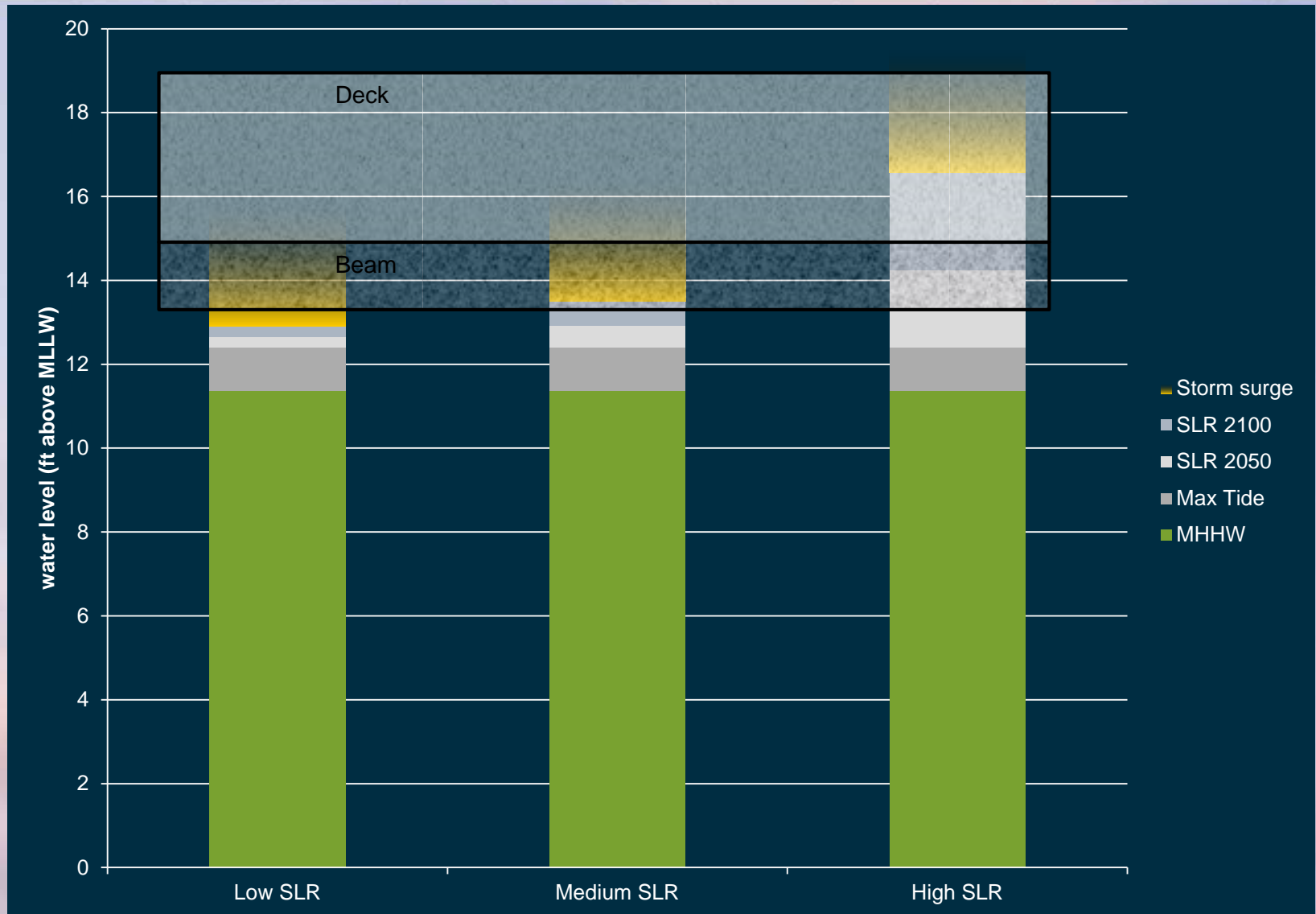
## Summary of SLR Projections by Mote et al and NAS (in inches)

SLR Estimate Level	By 2050	By 2100
<b>Mote et al</b>		
Low	3	6
Medium	6	13
High	22	50
<b>NAS</b>		
Low	-1.0	3.9
Medium	6.5 +- 4.1	24.3 +- 11.5
High	18.8	56.3

Mote et al, "Sea Level Rise in the Coastal Waters of Washington State," 2008

National Academy of Sciences, "Sea-Level Rise for the Coasts of California, Oregon and Washington: Past, Present and Future," 2012

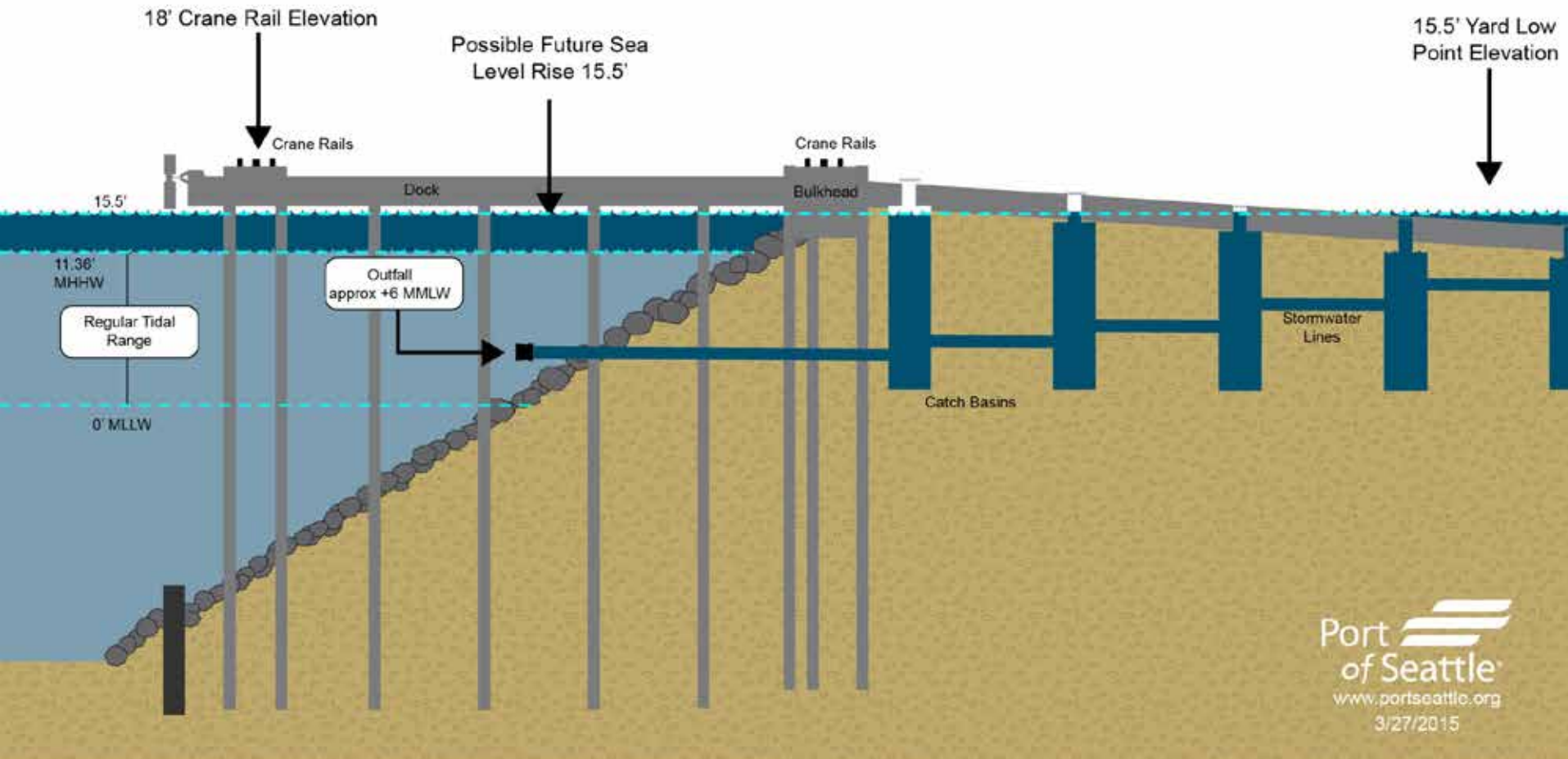
# Future Storm Scenarios





# FLOODING MECHANISM 1:

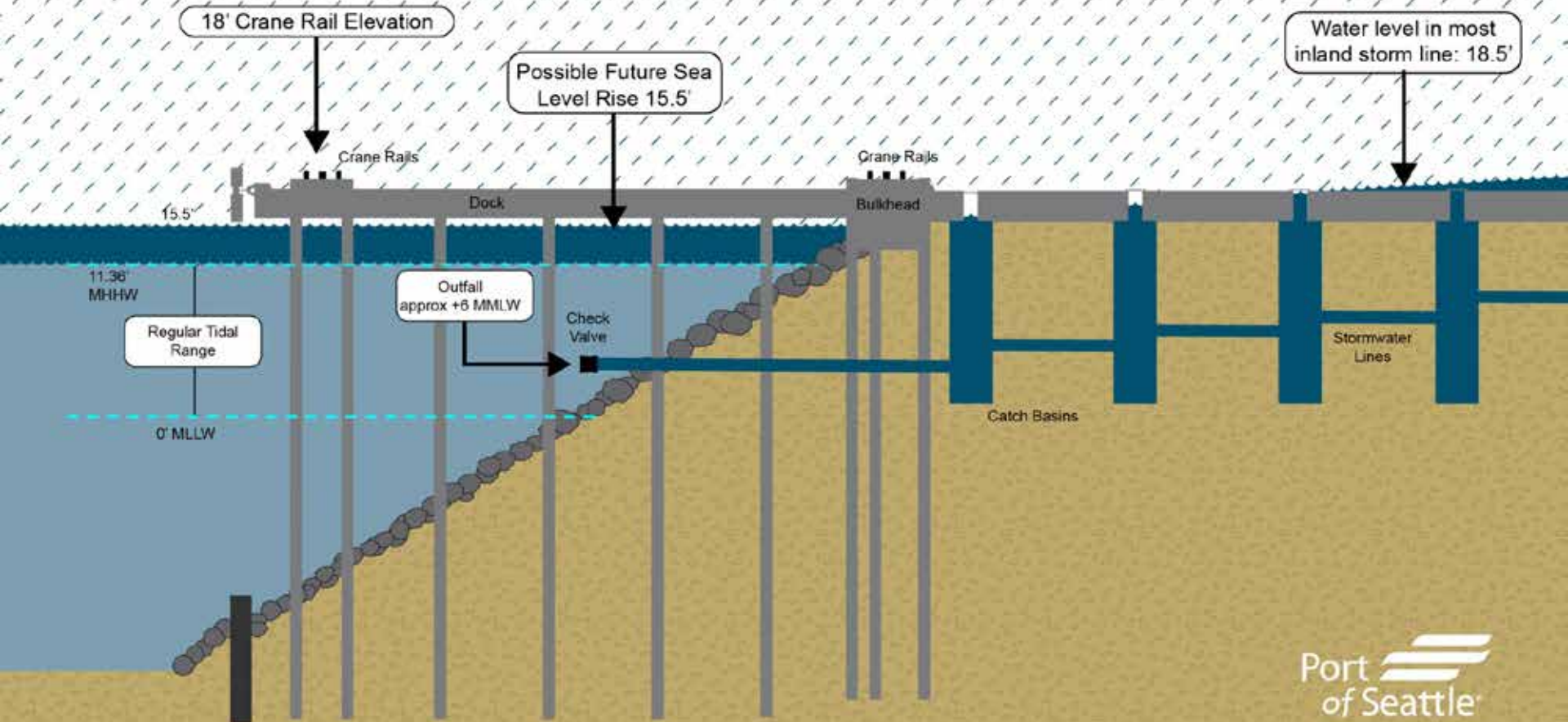
Backflow in storm lines to low areas of terminal



## FLOODING MECHANISM 2:

Hydraulic resistance in storm lines during a major precipitation event

Major precipitation event



# Actions

- Best practices for electrical equipment
- Modeling storm water system performance
- Major terminal upgrades allowing for rising elevations