National Park Service
U.S. Department of the Interior

Yellowstone National Park

Air Quality
(& Soundscapes)

Winter Use Draft Adaptive Management Plan

Public Meeting

West Yellowstone, Montana

August 10, 2015

EXPERIENCE YOUR AMERICA

Air Quality (AQ) Workgroup Process
(same as Soundscapes)

- Developed draft monitoring of OSV air quality (AQ) impacts
- Meetings
  - Met initially in person 22 Nov. 13
  - Met by conference call 26 Feb and 30 Apr 14
  - Several more recent group emails to review draft chapter

Air Quality Workgroup Process

- Topics discussed
  - State of current knowledge
  - Current monitoring
  - Additional monitoring needs
- Outcome of discussions
  - General agreement to continue current monitoring at current locations
  - Draft chapter in plan

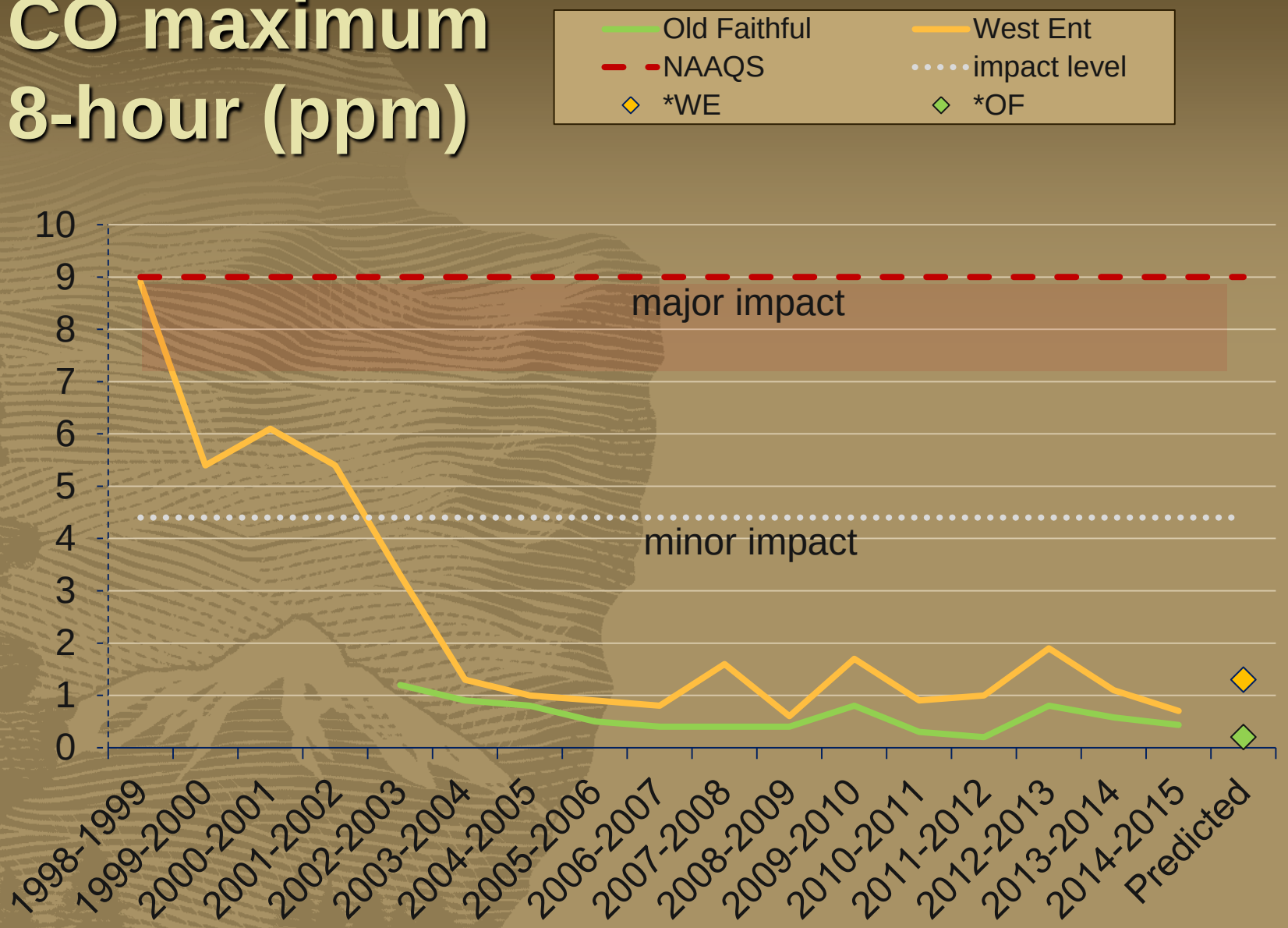
Air Quality: Monitoring Summary

- Data collection has focused on travel corridor between West Entrance (WE), Madison Junction, and Old Faithful (OF)

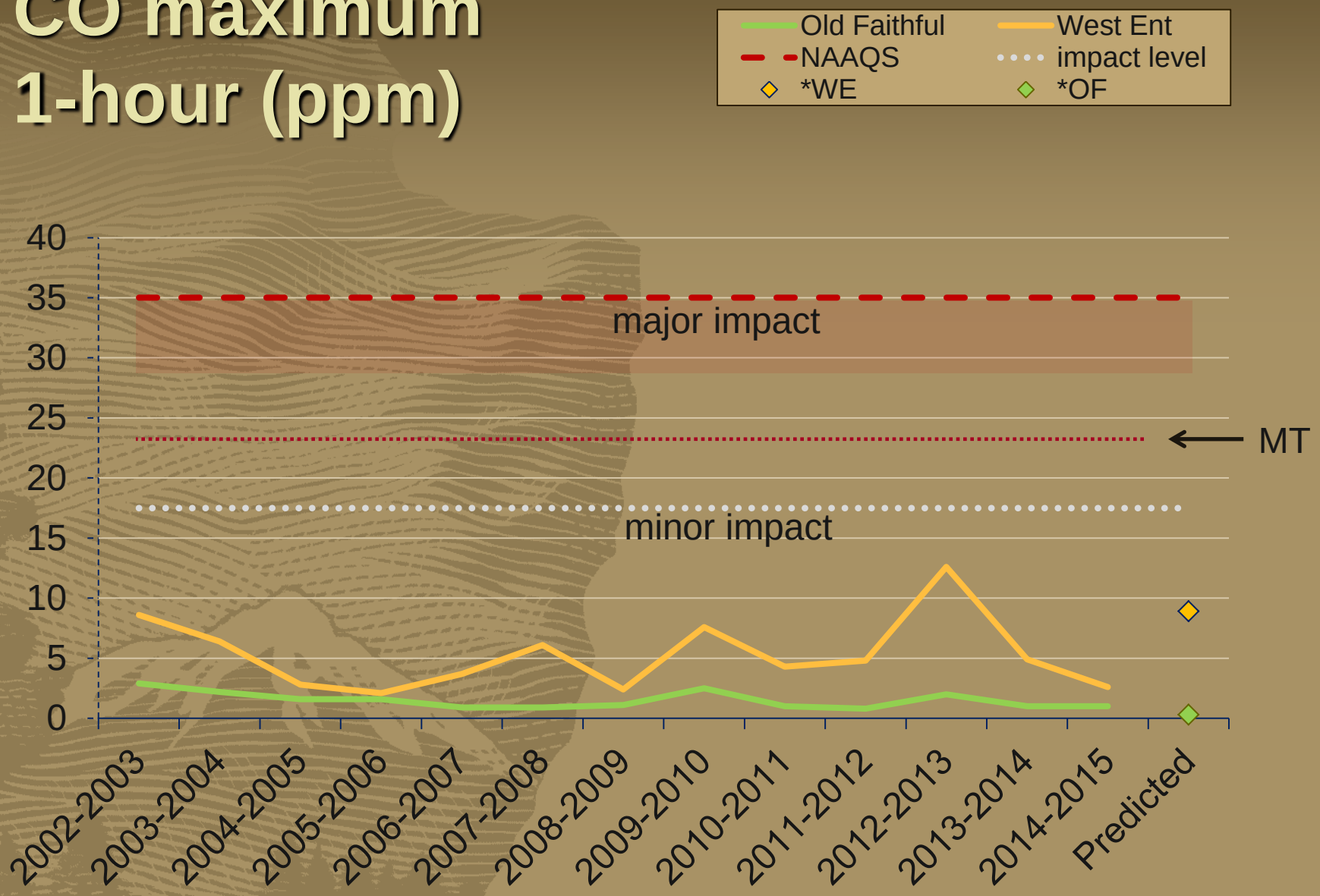
Air Quality: Monitoring Summary

- Carbon Monoxide (CO) and Particulate Matter ($PM_{2.5}$) monitored since 2002
  - CO at WE since 1998
  - AQ has improved dramatically since 1990s - BAT requirements, reduced idling, guides
- Nitrogen Dioxide ("NO_2"= NO_x - NO) monitored since 2009

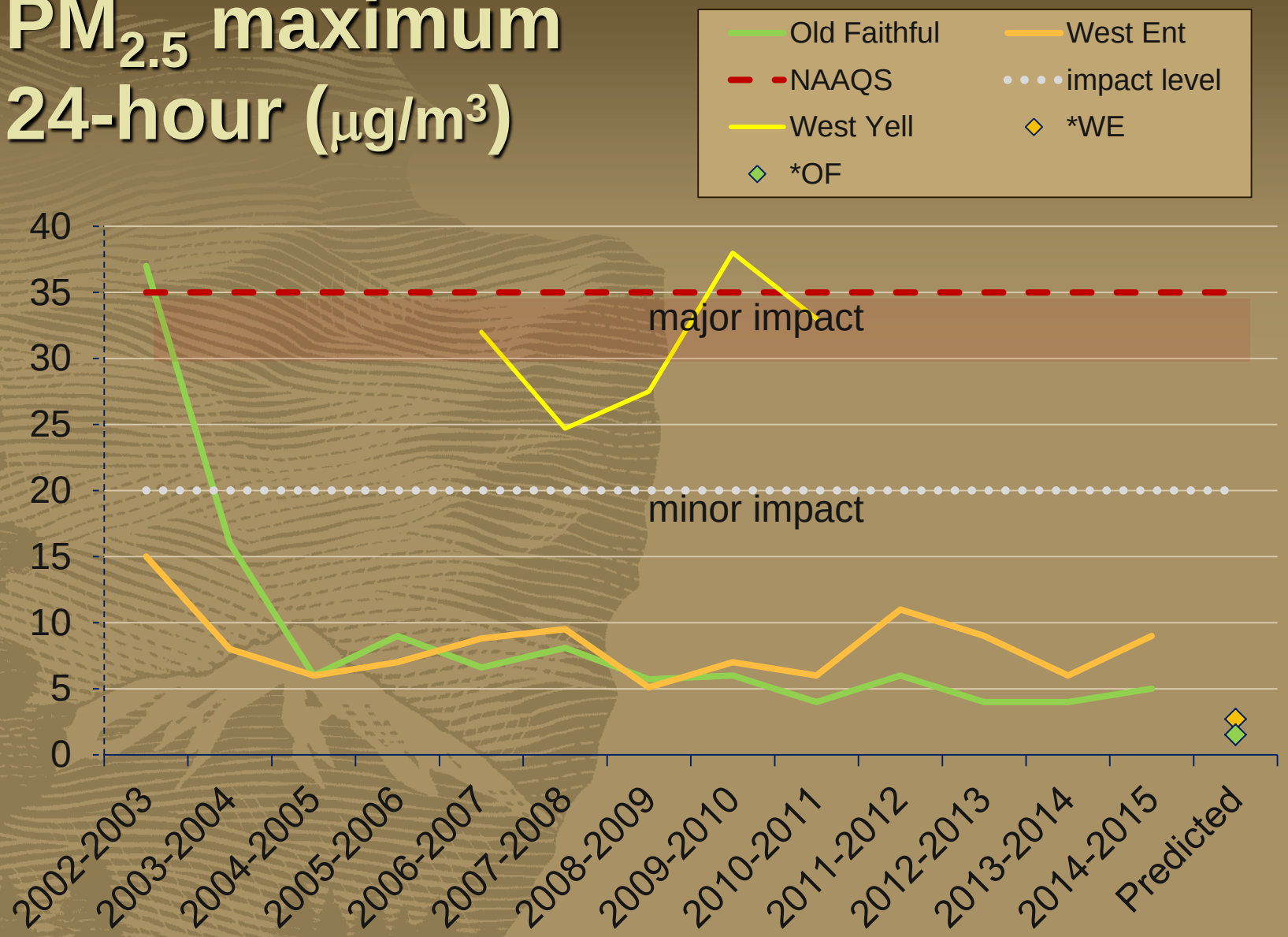
CO maximum 8-hour (ppm)



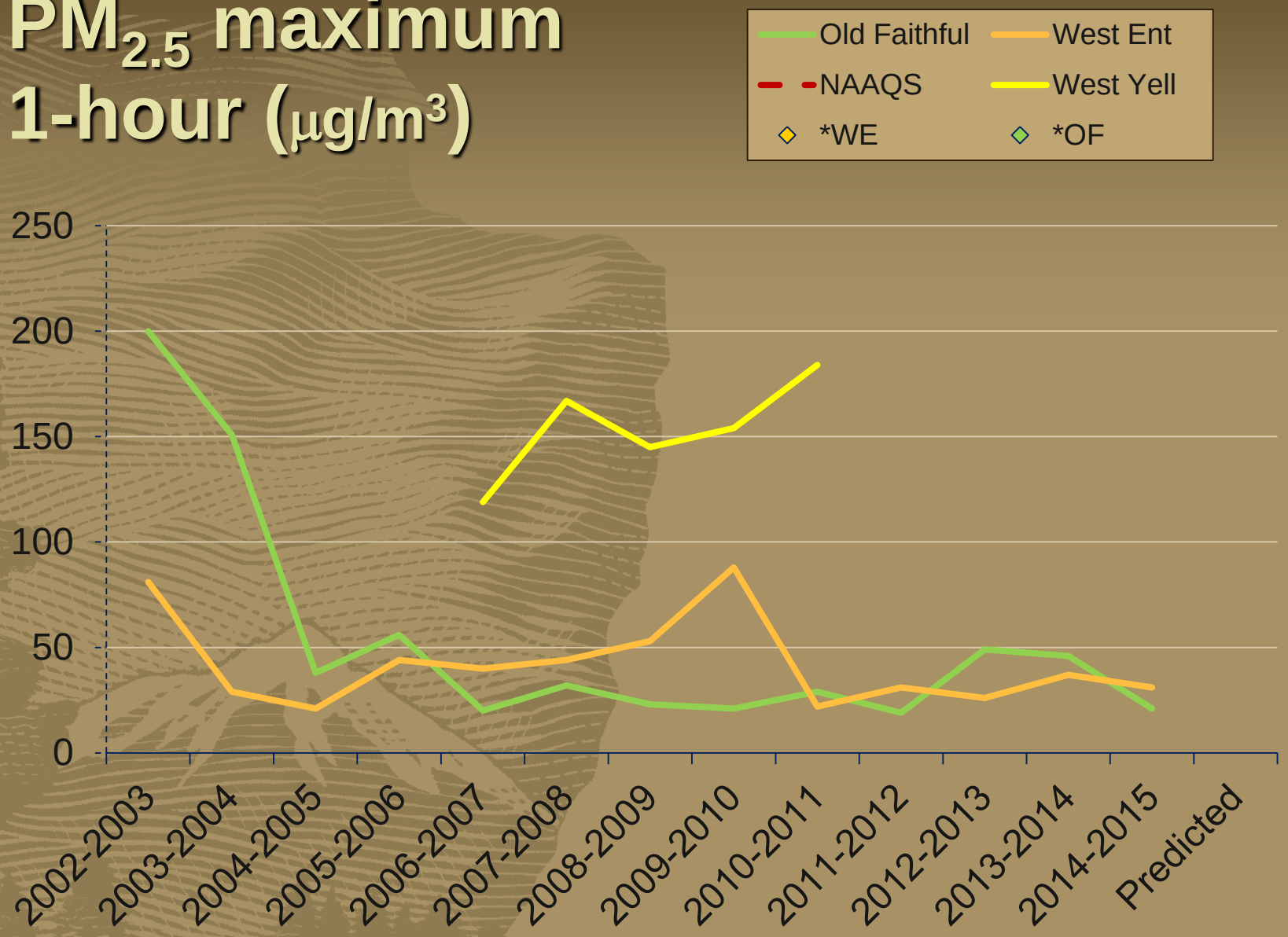
CO maximum 1-hour (ppm)



$PM_{2.5}$ maximum 24-hour ($\mu g/m^3$)

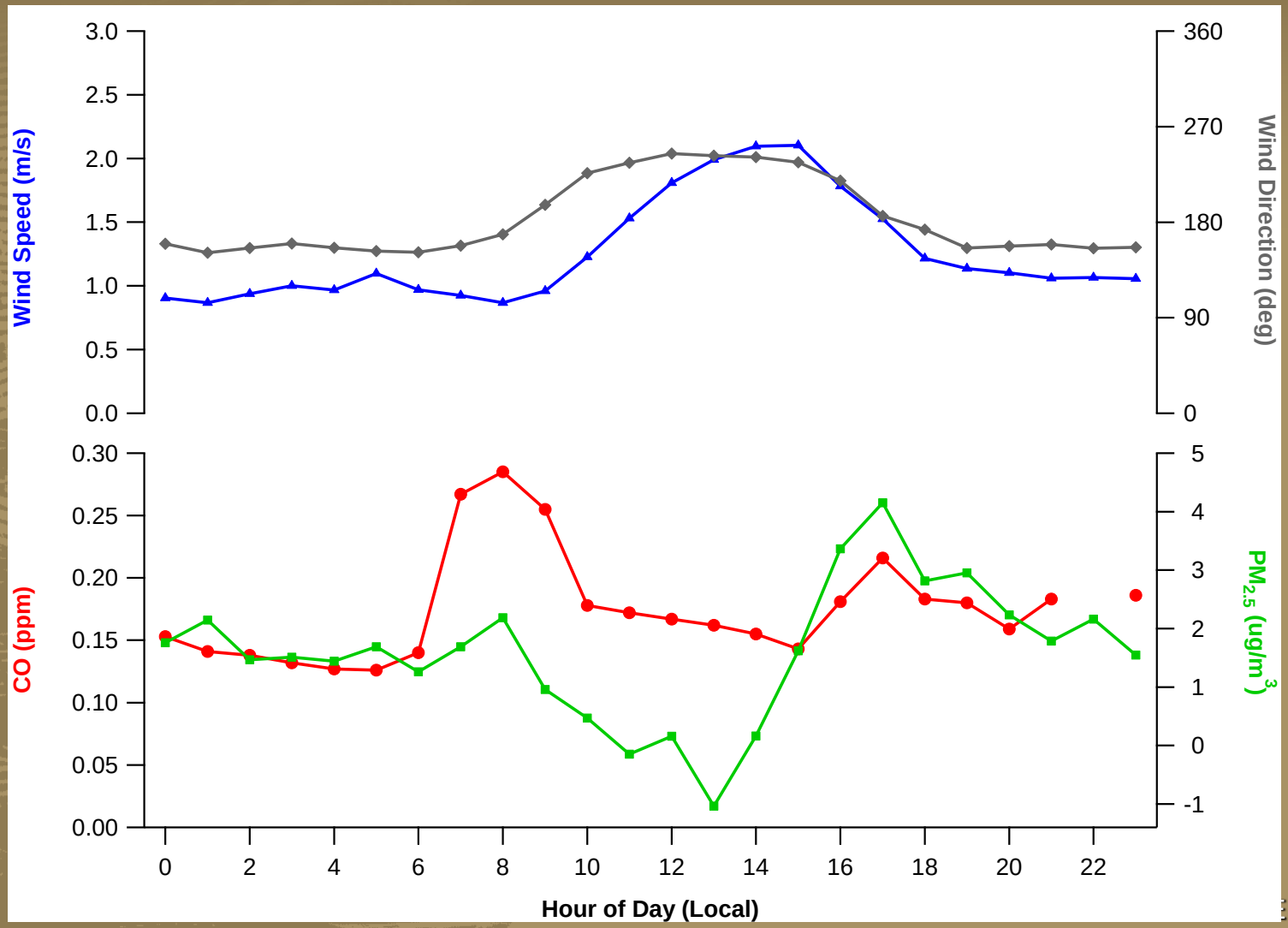


$PM_{2.5}$ maximum 1-hour ($\mu g/m^3$)

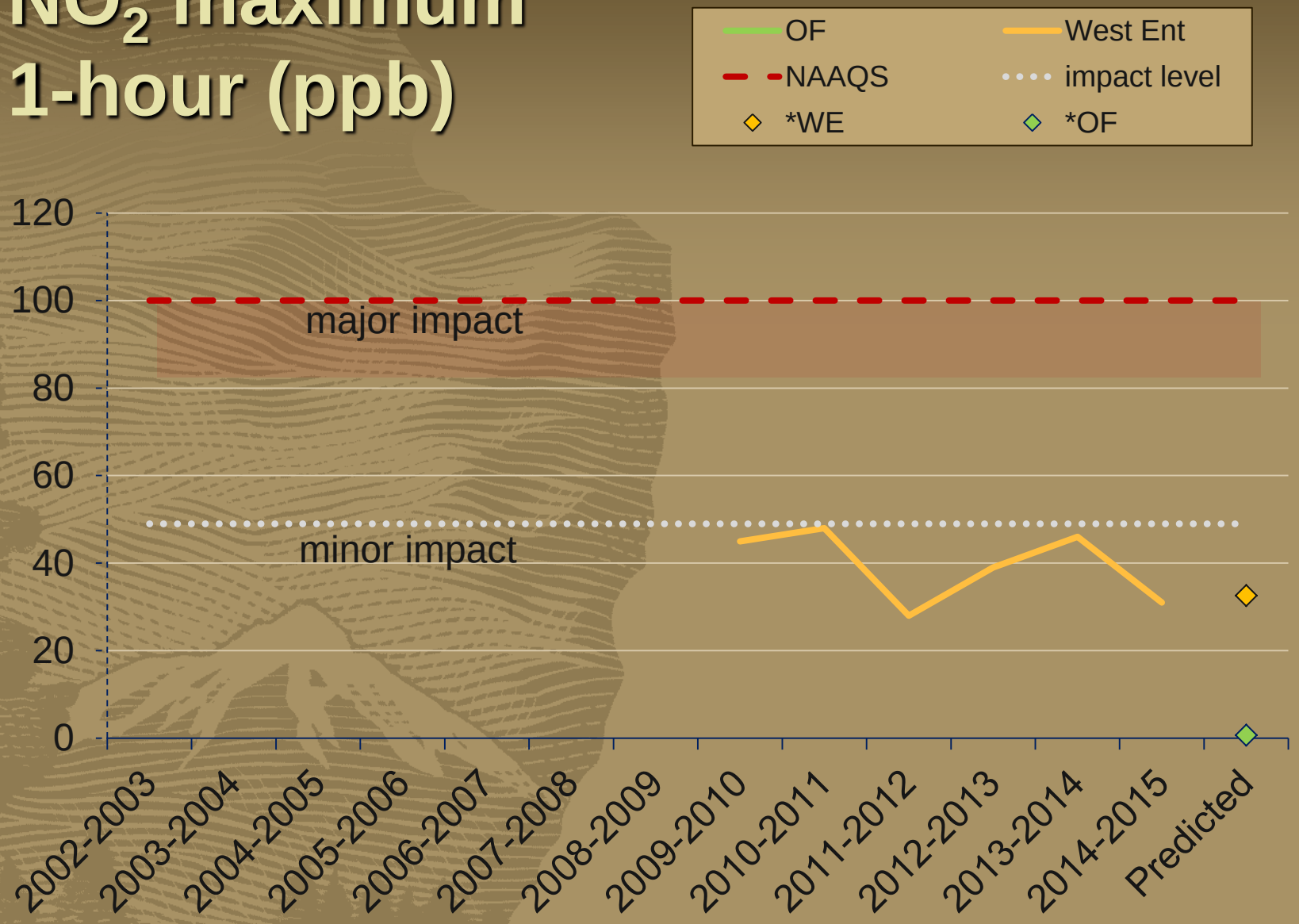


OF Diurnal Cycles

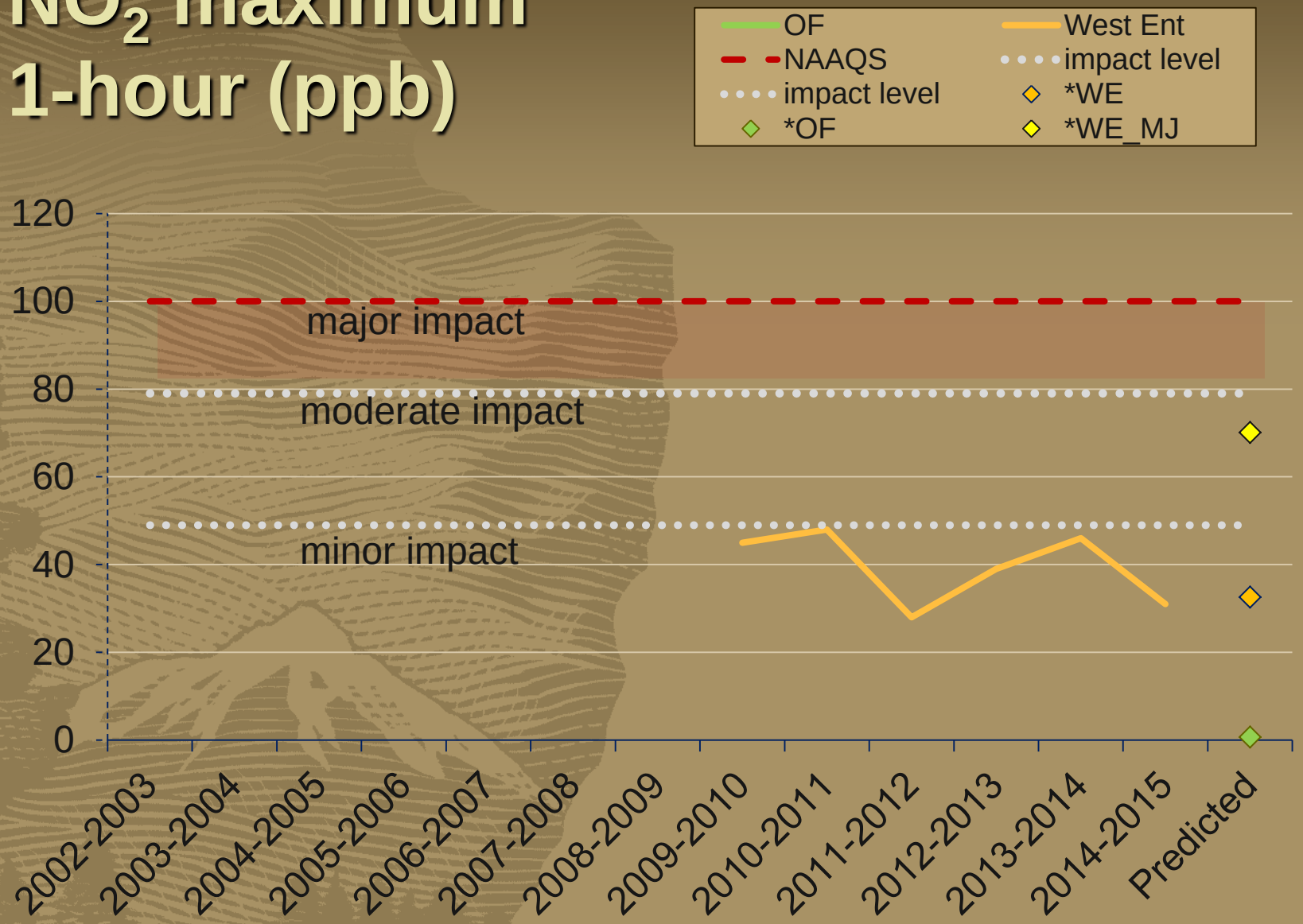
December 15, 2014 – March 15, 2015



NO_2 maximum 1-hour (ppb)



NO_2 maximum 1-hour (ppb)



Suggested Metrics Goal 1:
Keeping Impacts Within the Range Predicted

- Continue monitoring long-term sites at Old Faithful (OF) and West Entrance (WE)
  - Carbon Monoxide (CO)
  - Particulate Matter ($PM_{2.5}$)
  - Nitrous Dioxide (NO_2, NO_x & NO)
- Cost estimate = $65,000/year

- Add temporary NO_2 site in corridor between WE and Madison Junction
- Cost estimate = $22K to $30K depending on duration of study

Assumptions Goal 1:
Keeping Impacts Within the Range Predicted

- *allow only BAT snowmobiles and snowcoaches*
- *allow only prescribed number and type of Transportation Events*
- Monitor travel patterns to assure they remain true to WUP assumption that biggest impacts occur in WE to OF corridor
- Monitor compliance with speed limits
  - Increased speed may increase NO_2 emissions

Suggested Metrics Goal 2:
Data Regarding Comparability

- Must be done through emissions monitoring.
  - Coordinate with technology/emissions group. AQ monitoring at fixed sites can't separate the contributions from individual OSVs.

- Monitoring the ambient air quality will tell us whether the new mix of BAT snowmobiles and BAT snow coaches improves, degrades, or has a neutral effect on air quality

Suggested Metrics Goal 3:
Additional Social and Ecological Data

- No new data collection, but suggest the following:
  - Encourage the use of OSVs that are less polluting
  - Communicate & implement behaviors and operations that reduce AQ impacts
    - Slower speeds and less idling
- Better understanding of how new technology might affect NO_2 levels

Triggers and Mitigation Measures

- Goal 1
  - Trigger - Increasing trend in monitored metrics
  - Mitigation- Reduce idling, reduce OSV numbers, reduce speed
  - Trigger – Decreasing or stable trend in monitored metrics multiple years after implementation
  - Revisit monitoring needs: timing and metrics
- Goal 2
  - Trigger- Increasing trend in monitored metrics
  - Mitigation- Re-allocating or re-distributing transportation events between snowmobiles and snowcoaches

Special thanks to our working group:

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