Summary of Day 2
Q7: Multi-Criteria Decision-Making

• In making a decision, how do you consider both cost and environmental impact?
Q7: Summary

- Diverse opinions amongst groups
- Weighting is an approach discussed by some groups
- Proposed integration with PMS
Group 3
Multi-criteria decision making

• Agency cost is a significant factor
  – Are both variables in play?
• Policy or network level
• Weighted optimization
• No regrets options
• Equity issues
• Communication of goals
Multi-criteria decision making

- Track GHG has part of PMS/AMMS
- Cities and Counties do not measure IRI
  - Makes no difference because of low speeds
- What are the policies (dots) in the Perato optimal solution
- Bid process and enforcing policies
  - Weighting of bids / Rating systems
  - Different weights for different projects
Multi-criteria decision making

• Perato optimal for policy level, matrix approach for projects
• Discount rates
  – Based on time in atmosphere
Group 4
Multi-criteria selection

• How to implement this strategy into PMS?

• All options should be treated in the same way
  – Time frame
  – Data
  – Boundary condition
Group 5
In making a decision how do you consider both costs and environmental impacts?

• Two methodologies:
  – LCA + LCCA + Externalities
  – LCA + Initial Costs + Externalities

• And some process to compare/weight them
  – Analytical (w / different weights)
  – Analytical and externalities
Group 6
Multi-Criteria Decision-Making  
(Group 6)

<table>
<thead>
<tr>
<th>Decision Criteria</th>
<th>Init Const.</th>
<th>LCCA</th>
<th>Env Impact</th>
<th>Recycling</th>
<th>Maintainability</th>
<th>Total</th>
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<tbody>
<tr>
<td>Weighting</td>
<td>60%</td>
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<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>100%</td>
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<tr>
<td>HMAC Score</td>
<td>Weight</td>
<td>Score</td>
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<tr>
<td>Etc.</td>
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</table>

- A weighting system (see above for example) based on different decision criteria. Reduces the subjectivity of the process. Any subjectivity is transparent.
- Candidate decision criteria should be provided by the LCA working group.
  - The decision of which criteria to use and the weighting to those criteria should be made my the owner-agency.
  - Owner-agency committees deciding on the weighting factors should be diverse enough to speak for the competing criteria.
- Alternative pavement options (strategies) should be screened for all applicable constraints, such regulations, first cost, and policies.