

APPENDIX VI

Value and Investment Prioritization

This Appendix provides a summary of the results of an Expert Consultation Workshop that was held to conduct a relative cost evaluation of the Policy and Action Recommendations of the Final Plan.

An understanding of the relative costs of recommendations is helpful to the implementation strategy of the Statewide Conservation and Preservation Plan (SCPP). While costs and benefits are not the only criteria that should be used to prioritize aspects of the plan, they can be used to inform the implementation strategy, and are also useful for budget planning by agencies responsible for implementation of adopted recommendations. A full cost-benefit analysis would require assigning dollar amounts to each of the elements that make up the overall cost of implementing each recommendation, and assigning a dollar value to the ecological, economic, and social benefits of that recommendation. Costs of implementation are very site specific—for example, the cost of purchasing land easements can vary by orders of magnitude depending on the land type and location. Valuing benefits is even more difficult because the analytical tools used to estimate value are not widely used, and basic input data for these tools are lacking. A cost benefit analysis was performed on nine of the recommendations, and can be found in Appendix V.

Given these serious constraints, our team took a different approach to providing the Legislative-Citizen Commission on Minnesota Resources (LCCMR) guidance on this issue. For a series of natural resource values, we determined the magnitude of benefit and the degree to which policy and action recommendations benefited multiple resources (see section on Strategic Framework for Recommendations and Figure 5). For each of these same recommendations, we assessed the relative cost of implementation using an expert consultation workshop. Only the policy and action recommendations were considered by this workshop, since the knowledge infrastructure recommendations were not assessed for benefits to multiple resources. This appendix presents the results of this workshop. Workshop participants included University of Minnesota economists, natural resource scientists, and policy experts¹. They assessed the overall investment cost of a given recommendation as low (single millions of dollars or less), medium (tens of millions of dollars), or high (hundreds of millions of dollars). Generally, the group reached consensus on the investment cost.

Workshop participants felt it important to identify who would bear the cost, and divided their cost assessments between public (government, citizen) and private (business and industry) sectors. All estimates assume recommendations would be implemented statewide unless otherwise indicated. Participants also emphasized several important overarching points:

- For recommendations that are considered high cost, there is almost always a way to scale up the recommendation over time to reduce the per annum cost.
- For many recommendations, the amount of investment correlates with the effectiveness of the outcome (e.g., incentive programs with high-value incentives are more effective than those with low-value incentives).
- All of these recommendations should be considered in the context of benefit per unit cost (or dollar invested), not just total cost.

¹Attendees included William Easter, Steven Kelley, Stephen Polasky, Laura Schmitt-Olabisi, Deborah Swackhamer, Steven Taff.

Table 1. Relative costs of implementing recommendations statewide (H = high cost, M = medium cost, L = low cost). The order of the recommendations corresponds to the order provided in Figure 5, section on Strategic Framework for Recommendations. Only Policy and Action recommendations were evaluated.

Overall Estimated Cost of Recommendations	Relative Cost (H = high cost, M = medium cost, L = low cost)		
Rec #	Recommendation	Public	Private
H2	Protect critical shorelands of streams and lakes	H	H
H1	Protect priority land habitats	H	H
H4	Restore and protect shallow lakes	H	H
H5	Restore land, wetlands, and wetland-associated watersheds	H	H
H6	Protect and restore critical in-water habitat of lakes and streams	M	M
H7	Keep water on the landscape	L	M
H8	Review and analyze drainage policy (ditch laws)	L	L
H3	Improve connectivity and access to recreation	L	L
LU1	Fund and implement a state Land Use Development and Investment Guide	M	M
LU2	Support local and regional conservation-based community planning	L	L
LU3	Ensure protection of water resources in urban areas	L	M
LU4/E4	Transition renewable fuel feedstocks to perennial crops	H	H
LU5	Reduce streambank erosion through reductions in peak flows	H	H
LU6	Reduce upland and gully erosion through soil conservation practices	M	M
LU8	Protect large blocks of forested land	M	M
LU10	Support and expand sustainable practices on working forested lands	M	M
T1	Align transportation planning across all agencies; streamline and integrate environmental transportation project review	L	L
T2	Reduce per capita vehicle miles of travel	H	L
T3	Develop and implement transportation polices that minimize impacts on natural resources	L	L
E1	Develop coordinated laws, policies and procedures across state agencies	L	L
E13	Invest in research and policies for “green payment” program	H	L
E17	Promote policies and incentives that encourage C-neutral homes, businesses, communities, and other institutions	?	L
E2	Invest in farm and forest preservation to prevent fragmentation due to development	L	M
E18	Implement policies and incentives to lower energy use of housing stock	L	L
E16	Provide incentives to transition a portion of Minnesota’s vehicle fleet to electrical power and renewable electricity production	M	M
E21	Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options	L	L
E19	Promote policies and strategies to implement smart meter and smart grid technologies	L	L
E14	Investigate opportunities to provide tax incentives for individual renewable energy investors	M	M
E20	Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction	L	L
E15	Invest in efforts to develop community-based energy platforms	L	L

Table 1 provides the results of the relative cost assessments. Some important points from the discussion follow the table. These are comments, opinions, or clarifications that were offered by individual workshop experts, and captured by the facilitator to add value to the summary. They do not represent a narrative summary of the workshop itself.

Discussion points:

H2: Protect critical shorelands of streams and lakes

- Cost would depend on location. Protection might actually increase property value in some locations. Thus investment might be offset by increased property values in some cases.
- Tools might include public/private partnerships, which affects cost and who pays.
- Purchased land easement acquisition or property purchase is always expensive.
- Zoning is less expensive but less effective. (It would be more effective with more enforcement, but also more expensive.)
- Distinction should be made between commercial and residential use: In northern Minnesota, residences are causing land use impacts, while in south-central Minnesota it is agriculture. Commercial and residential uses require different tools to achieve goals.
- Property tax approaches are also inexpensive but less effective. However, more money invested in them could make them more effective.

H1: Protect priority land habitats

- See discussion points above for H2.

H4: Restore and protect shallow lakes

- To reduce sediment and nutrient loading, action is needed upstream, which is likely expensive since it deals with the watershed and land use and not just the stream or river.
- Several different goals are represented within the recommendation. Because they represent multiple strategies/actions, it would be possible to start with a less expensive action and scale up.

H5: Restore lands, wetlands, and wetland-associated watersheds

- A detailed cost-benefit discussion can be found in Appendix V.

H6: Protect and restore critical in-water habitat of lakes and streams

- This is assumed to mostly refer to restoring near-shore in-water regions affected by docks and marinas. This covers a smaller surface area than wetlands and thus would cost less.
- Costs must include enforcement.
- Costs would be incurred over a relatively small commercial or municipal sector (marinas, commercial docks), but would be high for individual property owners that have docks.

H7: Keep water on the landscape

- In urban areas, efforts to reduce or prevent future impermeable surfaces are relatively inexpensive unless there is an incentive program.
- In urban areas, retrospective work would be more expensive than prospective, unless it is done as surfaces are replaced as part of business as usual.
- Runoff laws already exist for commercial properties.
- A large educational effort would be needed for homeowners to change behavior.
- “Smart” drainage systems would be needed in agriculture.
- If activities like best management practices (BMPs) were required, the cost per acre would be low but the land area would be large.

H8: Review and analyze drainage policy

- A detailed cost-benefit discussion can be found in Appendix V.

H3: Improve connectivity and access to outdoor recreation

- Targeted land purchase to improve connectivity would involve purchasing strategic gaps (e.g., pieces of land between high-habitat-quality lands), so the amount of land would be less than for H1 or H2.

LU1: Fund and implement a state Land Use Development and Investment Guide

- Developing it would be of low cost and incurred by the public sector; implementing it would be medium cost for public and private sectors.

LU2: Support local and regional conservation-based community planning

- Incentives would be relatively low cost as described in the recommendation.

LU3: Ensure protection of water resources in urban areas

- “Credits” would be for compliance with state regulations.
- Water is already regulated, so not starting from scratch.
- If TMDLs are to be met, the cost could be very high.
- For some individuals and businesses, the cost might be high.

LU4/E4: Transition renewable fuel feedstocks to perennial crops

- A detailed cost-benefit discussion can be found in Appendix V.

LU5: Reduce streambank erosion through reductions in peak flows

- The cost would overlap with that for other recommendations, including H8.
- Initial investment would be high due to cropping and drainage changes, but the maintenance cost would be low.

LU6: Reduce upland and gully erosion through soil conservation practices

- Costs would be mostly for education and incentives.

LU8: Protect large blocks of forested land

- Some acquisition is included which is costly; the mechanism differs from that for E2.

LU10: Support and expand sustainable practices on working forested lands

- Like other recommendations, this would be low cost if the layers of strategies are implemented incrementally.
- It's unclear to what extent this would be a public cost.

T1: Align transportation planning across state agencies; streamline and integrate environmental transportation project review

- This is nearly impossible due to political barriers, but the cost would be very low.

T2: Reduce per capita vehicle miles of travel

- The strategies here are many, and the total costs could be expensive to the public sector depending on the specific strategy; but costs to private sector should be less than to public.

T3: Develop and implement sustainable transportation policies that minimize impacts on natural resources

- There would be incremental costs of building new roads with standards for runoff and habitat protection.

E1: Develop coordinated laws, policies, and procedures across state agencies

- Policies and procedures could be developed at relatively low cost to the public sector and little to no cost to the private sector.

E13: Invest in research and policies for "green payment" program

- Setting up policies for green payments is not expensive; implementing green payments can be much more expensive. Effectiveness would be proportional to investment.
- Costs are entirely public.

E17: Promote policies and incentives that encourage carbon-neutral homes, businesses, communities, and other institutions

- There are lots of variables in the equation for the costs of renewable energy and costs are very hard to predict because prices are volatile, so costs could be anywhere from low to high on the public side.
- Policy development would be low cost and have low benefit. Cost and effectiveness would depend on the degree of implementation.
- Evidence suggests energy efficiency investments are low cost and have a short payback time.
- Retrofitting is more expensive, but payback time is still relatively short.
- The renewable energy piece of recommendation could be expensive.
- The economic trade-off in cost between conservation and renewable energy should be considered. (Right now, conservation is much cheaper.)

E2: Invest in farm and forest preservation to prevent fragmentation due to development

- Zoning is a primary strategy and not expensive.
- Cost would be medium in the private sector because not a lot of large parcels are left.
- Cost depends on land demand.

E18: Implement policies and incentives to lower energy use of housing stock

- Points made were similar to those for E17, but focused on new buildings.

E16: Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production

- A detailed cost-benefit discussion can be found in Appendix V.

E21: Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options

- Costs would be low for developing standards and policies and higher for implementation.
- A mandate would shift costs to generators (private sector).
- This would be handled through a public entity but adjusted for user volume, which shifts costs to the private sector.
- Minnesota doesn't landfill a lot; total cost would be low because it would entail retrofitting existing landfills.
- This may also include adding mechanisms for energy capture on sewage plants.

E19: Promote policies and strategies to implement smart meter and smart grid technologies

- This recommendation is mostly about research and changing rate structure, which is not expensive.
- The challenging part would be integrating it into homes.

E14: Investigate opportunities to provide tax incentives for individual renewable energy investors

- This includes the incremental costs of distributed rather than centralized energy, and renewable fuels rather than coal.
- On a big scale, it's expensive.
- Estimated cost is at least \$20 million per year if voluntary. (The cost in Massachusetts is \$68 million per year.)

E20: Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction

- Environmental impacts of shallow geothermal are unclear.
- Previous comments about incentive programs apply.

E15: Invest in efforts to develop community-based energy platforms

- The incremental cost would be low because we already pay for current energy.