

Electronic Tolls and Congestion Pricing Study Final Report

presented to

Connecticut Transportation Strategy Board

presented by

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with

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Project Goal and Overview

• Goal

- Prepare a document that lays out as many options as possible, sets the context for informed decision-making, and provides a knowledge base with respect to tolls and congestion pricing in Connecticut

• Areas of Investigation

• Concept Evaluation

- Traffic, Revenue, Cost
- Regional Equity
- Economics
- Environment
- Safety

• Implementation Evaluation

- Implementation Steps
- Federal Requirements
- Public/Private Partnerships
- Privacy

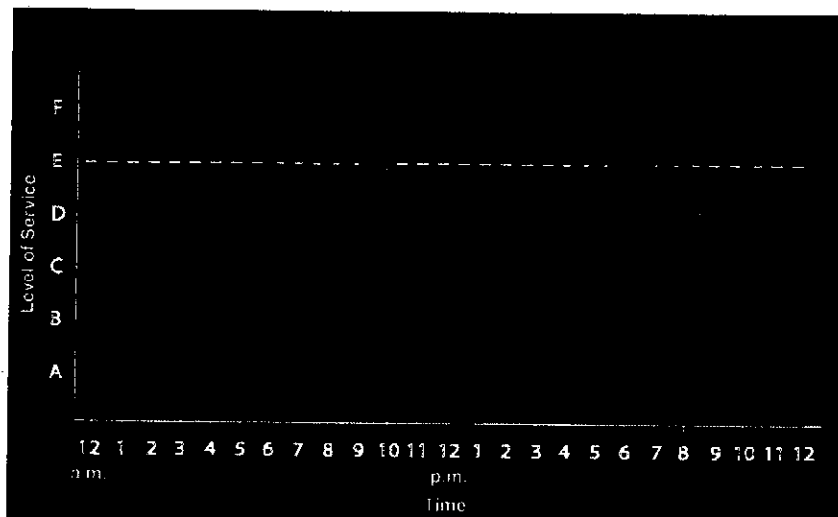
All Electronic Tolling (AET)



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Congestion Pricing

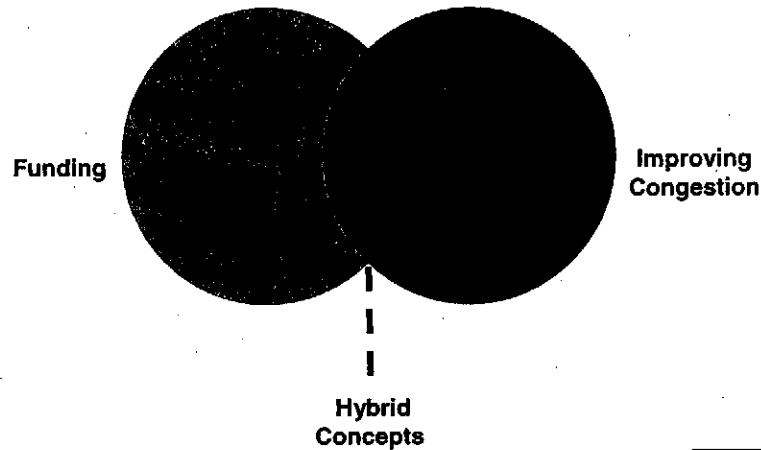


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Policy Motivations Need to Drive Tolling and Congestion Pricing

Policy Drivers and Potential Approaches



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Concepts Studied

- **A: New Tolloed Express Lanes** – adding new tolloed lanes next to “free” general purpose lanes on sections of highway
- **B: Border Tolling** – toll all traffic entering Connecticut at major highways
- **C: Truck-Only Tolling** – toll trucks on limited access highways
- **D: HOV to HOT Lane Conversion** – convert Connecticut’s two HOV lanes high-occupancy toll (HOT) lanes
- **E: Convert Existing Shoulders on Limited Access Highways to HOT Lanes** – identify sections of shoulder that could be converted into tolloed travel lanes

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Concepts Studied (continued)

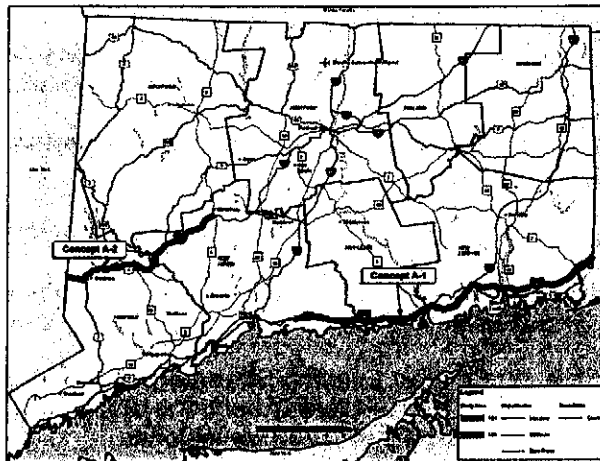
- **F: Toll New Capacity on Existing Highways** – toll all lanes of a highway to pay for new capacity
- **G1: Toll all Limited Access Highways** – toll all traffic on all limited access highways to pay for new capacity and reconstruction
- **G2: Tax on All Vehicle Miles of Travel** – tax all vehicles on all roadways based on how many miles they use
- **H: Congested Corridor Tolling** – toll certain congested corridors by time-of-day to alter travel behavior, reduce congestion, and fund transportation improvements

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Concept A – New Toll Express Lanes

- **I-95 – Branford to Rhode Island State line**
- **I-84 – Waterbury to New York State line**



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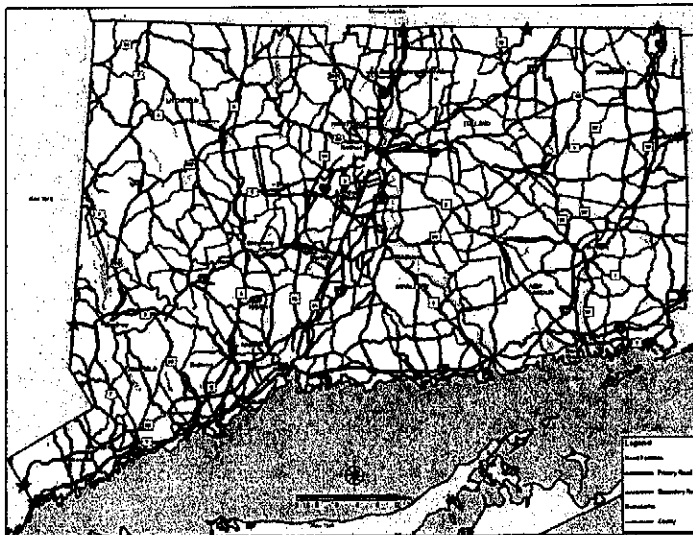
Concept A – New Toll Express Lanes (continued)

- Not enough sustained congestion to generate revenue to support operating expenses, much less construction
- Life-cycle financial shortfall
 - I-95 = (\$1.56 billion)
 - I-84 = (\$469 million)
- Some traffic improvement
 - I-95 = 6.2% annual reduction in delay
 - I-84 = 13.8% annual reduction in delay
- No significant negative impacts

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Concept B – Border Tolling at Major Highways



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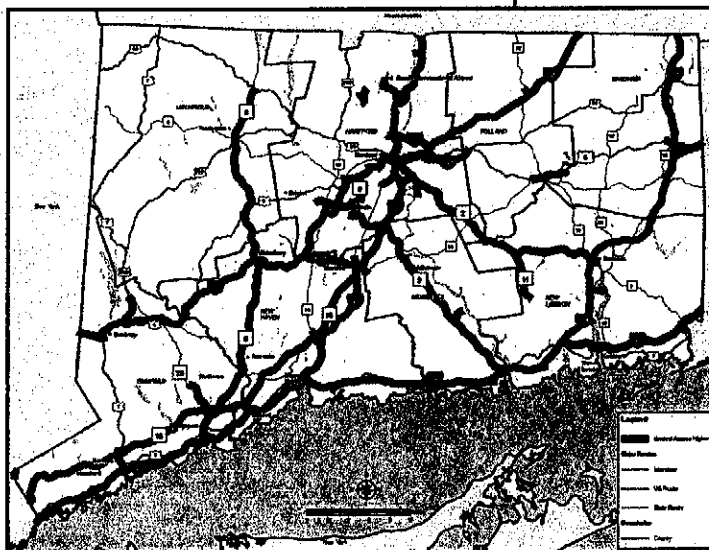
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Concept B – Border Tolling at Major Highways (continued)

- Significant revenue, but not “congestion pricing”
 - Life-cycle financial surplus
 - \$1 auto toll = \$3.8 billion
 - \$3 auto toll = \$12.2 billion
 - \$5 auto toll = \$19.5 billion
 - Investment of revenue could provide congestion relief
 - Relatively small share diverts from highway, but local impacts can be significant
 - Potentially considerable economic impacts in border regions, environmental impacts from diversion
 - Current Federal regulations require revenue to be used on highways where it is collected
- 10 • Possible Interstate Commerce Clause issue

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Concept C – Toll Trucks on Limited Access Highways



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Concept C – Toll Trucks on Limited Access Highways (continued)

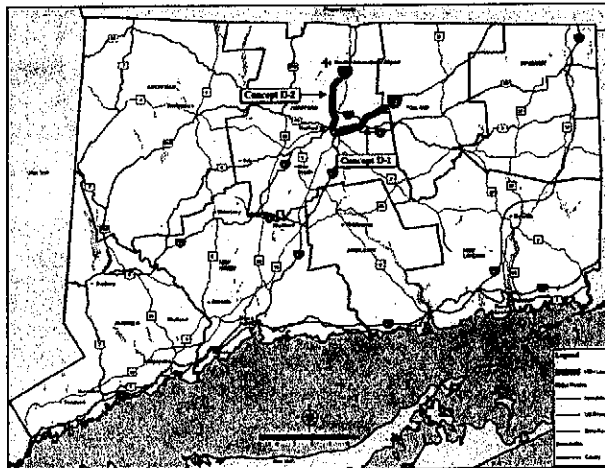
- **Significant revenue:**
 - Life-cycle financial surplus
 - \$0.30 per mile = \$3.7 billion
 - \$0.45 per mile = \$7.1 billion
 - \$0.60 per mile = \$10.9 billion
- **Traffic diversion small, but would cause environmental and community impacts**
 - Vehicle hours of travel expected to increase
 - Diverting trucks defeats purpose of limited access highways
- **Higher cost of doing business could cause economic impacts**
- **State and national trucking associations will strongly oppose**
- **Would need Federal approval for Interstates, and Interstate revenue would need to be used on highway where it was collected**

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Concept D – HOV to HOT Lane Conversion

- **I-84 and I-91 HOV Lanes**



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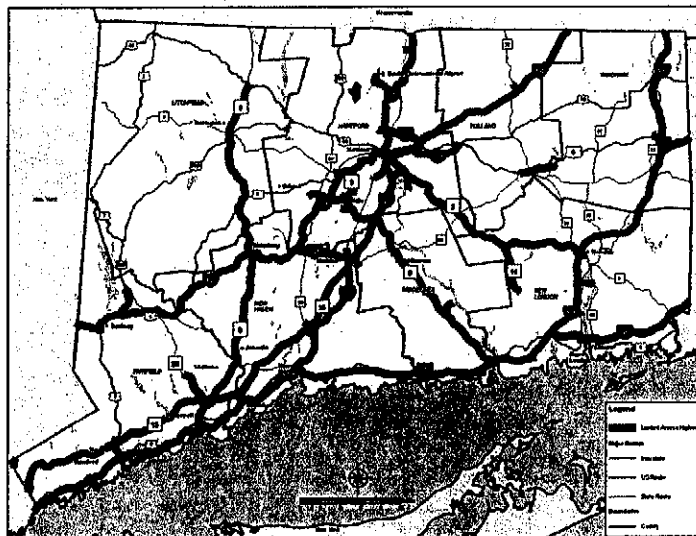
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Concept D – HOV to HOT Lane Conversion (continued)

- Not enough sustained congestion to generate revenue to cover operating costs
 - I-91 project perhaps close enough to warrant a second look
- Life-cycle financial shortfall
 - I-84 = (\$53.6 million)
 - I-91 = (\$28.0 million)
- Some traffic improvement
 - I-84 = 8.1% reduction in rush-hour delay
 - I-91 = 13.4% reduction in rush-hour delay
- No negative impacts

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Concept E – Convert Highway Shoulders to HOT Lanes



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Concept E – Convert Highway Shoulders to HOT Lanes (continued)

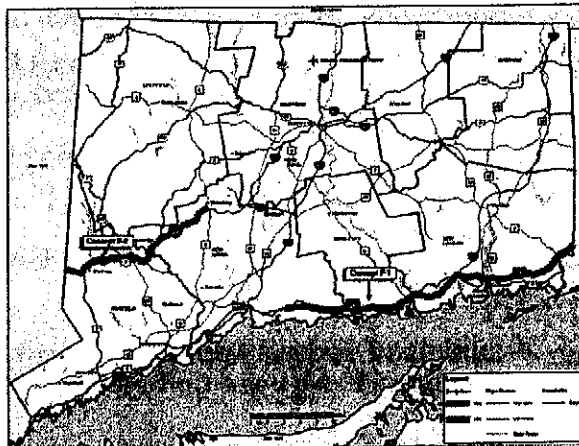
- **Potential locations from past ConnDOT studies**
 - I-95 and Route 15 – New York State line to Bridgeport
 - I-91 in Hartford area
 - I-84 in Hartford area
- **Major engineering and safety issues**
 - Insufficient minimum clearances
 - Major bridge reconstruction
 - Widening shoulders prohibitively expensive
- **Concept dropped from further analysis**
 - Findings consistent with past ConnDOT reports

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Concept F – Toll Individual Highways Needing New Capacity

- **Planned widening of one lane in each direction:**
 - F-1: I-95 – Branford to Rhode Island State line
 - F-2: I-84 – Waterbury to New York State line



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ENGINEERING

Concept F – Toll Individual Highways Needing New Capacity (continued)

- Significant revenue potential
 - I-95 life-cycle financial surplus
 - \$0.10 per mile = \$1.1 billion
 - \$0.20 per mile = \$4.3 billion
 - \$0.30 per mile = \$6.7 billion
 - I-84 life-cycle financial surplus
 - \$0.10 per mile = \$1.0 billion
 - \$0.20 per mile = \$3.0 billion
 - \$0.30 per mile = \$4.4 billion
 - Financing costs would reduce these amounts
- Significantly improves I-95 and I-84, but...

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(continued)



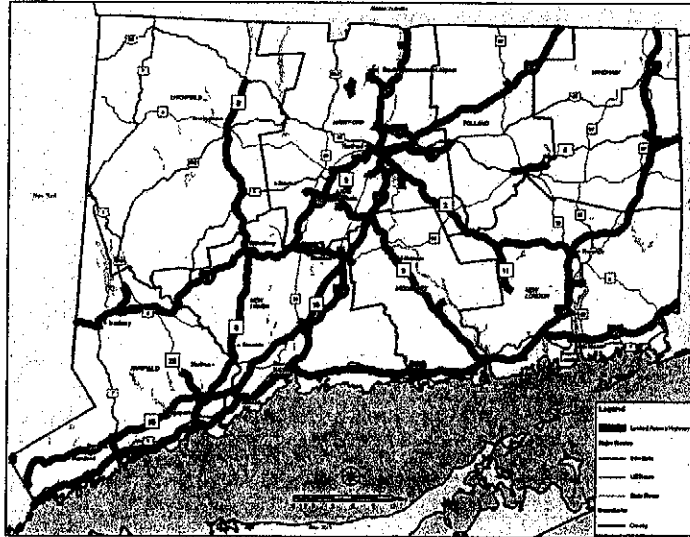
Concept F – Toll Individual Highways Needing New Capacity (continued)

- Significantly improves I-95 and I-84, but...
 - Diversion to local roads would offset highway improvements at lowest toll level; be a net negative at higher levels
- At higher tolls, diversion eliminates need for new highway capacity – like congestion pricing
- Environmental and safety impacts associated with diversion
- Would need Federal approval, and Interstate revenue would need to be used on highway where it was collected
- Privacy issue – few alternate choices

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Concept G1 – Toll All Limited Access Highways



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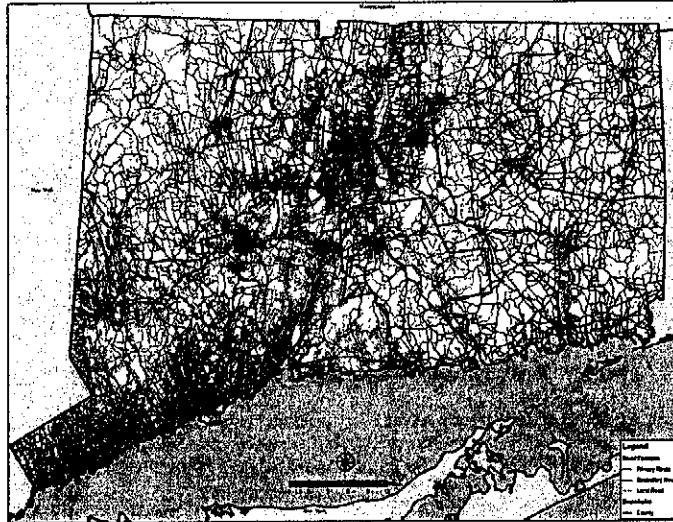
Concept G1 – Toll All Limited Access Highways (continued)

- **Significant revenue potential**
 - **Life-cycle financial surplus**
 - \$0.03 per mile = \$9.8 billion
 - \$0.045 per mile = \$16.8 billion
 - \$0.06 per mile = \$24.0 billion
- **Diversion to local roads is up to 3% of daily volume**
 - Overall vehicle hours expected to increase by 3.4% by 2030
- **Environmental and safety impacts from diversion effects**
- **Privacy issue – few alternate choices**
- **Revenue from Interstates could be used only to improve that Interstate under current Federal rules**

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Concept G2 – Tax on All Vehicle Miles Traveled



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Concept G2 – Tax on All Vehicle Miles Traveled (continued)

- Different from all other concepts
 - Studied both with keeping fuel tax and as a replacement
- Significant revenue potential
 - Life-cycle financial surplus – gas tax stays
 - \$0.02 per mile = \$15.8 billion
 - \$0.04 per mile = \$30.9 billion
 - \$0.06 per mile = \$45.3 billion
 - Life-cycle financial surplus – gas tax eliminated
 - \$0.02 per mile = \$16.1 billion
 - \$0.04 per mile = \$31.5 billion
 - \$0.06 per mile = \$46.3 billion
 - We did NOT estimate costs of implementation

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(continued)

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Concept G2 – Tax on All Vehicle Miles Traveled (continued)

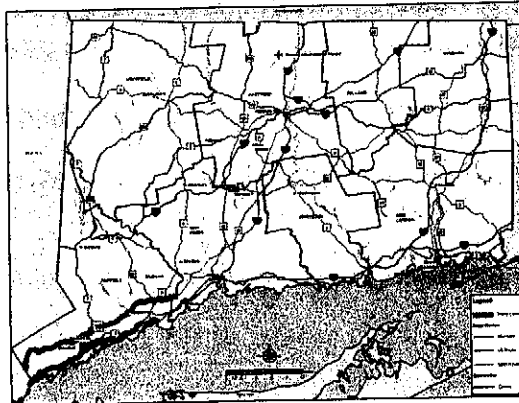
- Transportation impacts – reduce statewide VMT
 - With gas tax: 2.3%-6.8% in VMT
 - Replace gas tax: 0% to 4.5% in VMT
 - No route diversion (everything is priced)
- Would need Federal approval for Interstates
- Largest privacy issue – nowhere to hide
- Has not been done anywhere
 - Small demonstration in Oregon
 - Under discussion in MA, RI, NC, ID and nationally
 - Significant implementation issues

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Concept H – Congested Corridor Tolling

- Selected one corridor for evaluation:
 - Southwest Connecticut:
 - I-95 – New York border to the Bridgeport/Stratford town line
 - Route 15 – New York border to the Milford/Stratford town line



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Concept H – Congested Corridor Tolling (continued)

- **Tolls set to moderate congestion on I-95 and Rte 15**
 - **Eliminating congestion impossible**
 - Limited by lack of alternative routes
 - Rules to “moderate” congestion used
 - **High tolls of \$1.00 or more per mile for many periods**
 - **No tolls when no congestion**
- **\$38.5 billion in life-cycle revenue**

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(continued)



Concept H – Congested Corridor Tolling (continued)

- **Significant diversion:**
 - **Largest impact on I-95 southbound in A.M.**
 - **Mostly to Route 1 which would break down in peak hours**
 - **Transit could pick up slack, but parking at stations an issue**
- **Environmental, economic, and equity issues result**
- **Spending of revenue for congestion pricing less constrained than for straight tolling**
- **Revenue from program might be used to mitigate impacts**

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Major Findings

- **A few concepts have little to recommend them:**
 - New toll express lanes on I-95 and I-84 (Concept A)
 - Tolls on trucks on limited access highways (Concept C)
 - Convert highway shoulders to HOT (Concept E)
- **HOV to HOT lane conversions would be relatively easy to implement, but finances are tenuous (Concept D):**

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Major Findings (continued)

- **Tolling existing highways without making improvements raises a lot of money but there will be impacts**
 - Border tolling on major highways (Concept B)
 - Tolling all limited access highways (Concept G-1)
 - Tax on all vehicle miles of travel (Concept G-2)
 - Use of revenue is key
 - Federal rules currently limit use on Interstates for pure "tolling" currently limited to the specific Interstates under Federal rules
- **Tolling existing highways that need widening can generate revenue to help pay for or offset the improvements, but the toll itself could reduce demand, and the need for the improvement (Concept F)**

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Major Findings (continued)

- Corridor congestion pricing is a difficult challenge
 - Toll rates would be very high
 - Diversion to alternate routes would create adverse impacts

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Discussion

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