

Benefit-to-Cost of I-395/Route 9 Connector Study

Larry Adams

4/19/2013 1:04 PM

To: Carol Woodcock / U.S. Senator Susan Collins; Darlene Simoneau (Clerk) / 126th JSC on Transportation;
Elizabeth Montgomery Schneider MacTaggart / U.S. Senator Angus King;
Holly Mullen (Clerk) / 126th JSC on Appropriations and Financial Affairs; Representative Arthur Verow - District#21;
Representative David Johnson - District#20; Rosemary Winslow / U.S. Congressman Mike Michaud; Senator Edward Youngblood - District#31;
Cc: Eddington Board of Selectman and Town Manager; Brewer City Council; Mayor Jerry W. Goss; Councilor Kevin O'Connell;
Representative Arthur Verow - District#21; Brewer City Manager;



LTE +
Infrastructure.
pdf



Benefit to Co...

Good afternoon to all:

The attached document, Benefit-to-Cost Analysis, includes several FOAA documents indicating that the MDOT will downgrade the design criteria of the 2B-2/preferred alternative from freeway design criteria to rolling design criteria following the conclusion of the NEPA process. This isn't a recent decision; this change in design criteria is documented from December 2011. We wouldn't know now if it wasn't for the FOAA request. FOAA documents supporting MDOT's Benefits-to-Cost Analysis of the 2B-2 alternative are included. The analysis indicates an acceptable 1.1 ratio, however there seems to be a discrepancy of \$1,000,000 to \$1,160,000 in installation costs favoring the B/C ratio; without that discrepancy, the B/C ratio is an unacceptable 0.988 to 0.991.

"The Maine Department of Transportation...[regrets the insufficient outreach](#) by MaineDOT to leaders of the affected communities along the proposed I-395 US Route 9 connector," the statement read. "Town officials and the residents of Brewer, Holden, Eddington and Clifton deserve to be fully informed of all decisions and progress. We recognize that it is our obligation to do so, and we will rectify this situation in the future.

FOAA documents now indicate that on the same day the MDOT was apologizing and making promises, they were already withholding the rolling criteria design change.

I was the gentleman mentioned in the media in January 2012 that discovered the changes to the study; [my tip to the BDN](#) was behind the newspaper article that broke the news to the public:

One would have to ask why it took a FOAA to find new information and what was the advantage to the MDOT of withholding that information from the public? What is the advantage of holding off until after the NEPA process is concluded? Would this design change, only applicable to alternative 2B-2 and not the other 70+ alternatives studied over 13 years, have altered the outcome of this study if it was done within the NEPA process? There has to be a reason behind MDOT's decisions and I think it's time that someone finds out what that was. This future design change, following the NEPA process, was not included in the March 2012 Draft Environmental Impact Statement, although the reduced cost of the rolling design was. The DEIS was released for public comment without the end product design included; why was that?

I have added the JSC of Transportation to the address list; I've included a previous document for them, LTE + Infrastructure, that most have already seen.

Yes – I deserve to be fully informed of all decisions and progress. I ask you all, when will that happen?

What else has been withheld?

Doesn't anyone else find the MDOT's lack of transparency and their lack of accountability to the public and the elected officials of the impacted communities disturbing?

[MDOT Public Participation](#) is not a suggestion – it is a State of Maine Statute.

Thank you for your time and consideration, Larry Adams

Benefit-to-Cost Analysis



Salmon Portland Chase (1.13.1808 to 5.7.1873) was U.S. Treasury Secretary under President Abraham Lincoln. This is the largest denomination of U.S. currency ever in public circulation, and was issued until 1946. As of May 30, 2009, only 336 \$10,000 bills were known to have survived.

http://en.wikipedia.org/wiki/Large_denominations_of_United_States_currency



- Our limited State/Federal tax revenues need to be spent wisely repairing the existing infrastructure, not on this I-395/Route 9 Connector project; the preferred alternative 2B-2 only met one out of the five (20%) Purpose & Needs in April 2009.
- “Adding more miles to our transportation system in this current fiscal environment doesn’t make financial sense,” said Bernhardt, “Our responsibility going forward is to manage our existing infrastructure within our existing budget.” (8.01.11)
http://www.maine.gov/tools/whatsnew/index.php?topic=DOT_Press_Releases&id=279591&v=article

Benefit-to-Cost Analysis versus Installation Costs:

This handout will provide insight into several irregularities uncovered after a close examination of 1,239 FOAA documents. Here are the facts:

- It should be noted that these documents were not available on the Study website or within the DEIS. They have only surfaced today because of the Eddington FOAA request. That fact alone should tell you something about how this story continues to unravel as new facts come out.

First, an interesting comment from DOT Commissioner Bernhardt on 8.01.11 following cancellation of the 10 year long/\$2.5 million dollar Wiscasset Bypass Study:

- "Our responsibility going forward is to manage our existing obligations within our existing budget, and to limit adding new infrastructure to that which is shown to provide overwhelming benefits. We know federal transportation funding will continue to decrease, and the era of special earmarks for transportation projects is over." <http://www.maine.gov/mdot/wcs/studyannouncementaug2011.htm>

FOAA Documents #000185-000187 established the Benefit-Cost Ratio of the 2B-2 preferred alternative @1.1; so the question becomes what is acceptable and what would be considered overwhelming? What was or is the importance of the lowered \$61,000,000 cost included in the DEIS without an explanation? The "freeway criteria" included in the DEIS does not match the cost included in the DEIS; there is a \$32,240,000 disparity. FOAA Document #000391 established MDOT plans to develop the 2B-2 preferred alternative, following the conclusion of NEPA, using "rolling criteria"; the reduced cost of that downgrade in design is already reflected in the DEIS.

This handout will clearly show the importance of that lower price and will include all documents needed to form that opinion. Benefit-Cost Analysis is analogous to Benefit-to-Cost Ratio, B/C ratio, BCR, Benefit-Cost ratio or Benefit/Cost Ratio.

FACT—Current design standard in the Draft Environmental Impact Statement:

Alternative 2B-2 would be a controlled-access highway and conceptually designed using the MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way. Route 9 would not be improved, and it would not provide high-speed, limited access connection to the east of East Eddington village. (DEIS Summary page S12-S13)

- The 2B-2 alternative, as described in the DEIS, would be conceptually designed using the MaineDOT design criteria for freeways.



Excellence Delivered As Promised

000391

December 6, 2011

Ms. Judy Lindsey
Maine Department of Transportation
16 State House Station
Augusta, ME 04333-0016

Re: Revised Cost Estimate for the Build Alternatives
I-395 / Route 9 Transportation Study

Dear Judy:

Attached please find a copy of the latest cost estimate for the build alternatives retained for further consideration and detailed analysis for your review and consideration. We are working to complete both the property acquisition and utility relocation technical memoranda; the memoranda will reflect the costs shown in the attached estimates.

This cost estimate for the build alternatives was prepared using the DOT's freeway criteria. We understand the DOT would like, following the conclusion of the NEPA process, for the preferred alternative to be developed using rolling criteria. Developing the preferred alternative using rolling criteria would reduce the cost to construct it. Based on the DOT's experience with similar projects, we ask that the DOT let us know the anticipated percent reduction in cost that would result from this change in criteria; we will apply this percent reduction to the cost to construct the build alternatives that is shown in the DEIS/Section 404 Permit Application.

We appreciate the opportunity to be of service on this important study. Please contact either Dave Hamlet or myself if you have questions.

Sincerely,

Gannett Fleming, Inc.

A handwritten signature in black ink, appearing to read "William M. Plumpton".

William M. Plumpton, CEP
Project Manager

WMP/
Attachment

Pc: D. Hamlet
File 048570

Gannett Fleming, Inc.

P.O. Box 67100 • Harrisburg, PA 17106-7100 | 207 Senate Avenue • Camp Hill, PA 17011-2316
t: 717.763.7211 • f: 717.763.8150
www.gannettfleming.com

Cost Estimate Summary for Range of Alternatives

| <i>Alternative</i> | <i>Construction</i> | <i>Utility Relocation</i> | <i>Engineering & Inspection</i> | <i>Right-of-Way</i> | <i>Mitigation</i> | <i>Total</i> |
|--------------------|---------------------|---------------------------|-------------------------------------|---------------------|-------------------|--------------------------|
| 2B-2 | \$ 75,491,276.60 | \$ 1,578,100.00 | \$ 12,078,600.00 | \$ 4,084,912.41 | \$ - | \$ 93,240,000.00 |
| 5A2B-2 | \$ 97,629,921.84 | \$ 3,130,600.00 | \$ 15,620,780.00 | \$ 5,205,118.05 | \$ - | \$ 121,590,000.00 |
| 5B2B-2 | \$ 79,879,364.36 | \$ 9,345,600.00 | \$ 12,780,700.00 | \$ 9,659,718.99 | \$ - | \$ 111,670,000.00 |

December 2011 FOR INTERNAL USE ONLY

www.i395-rt9-study.com

FACTS—FOAA Documents #000391/000392 establish:

1. This cost estimate for the build alternatives was prepared using the DOT's freeway criteria.
2. We understand the DOT would like, following the conclusion of the NEPA process, for the preferred alternative to be developed using rolling criteria.
3. ...we will apply this percent reduction to the cost to construct the build alternatives that is shown in the DEIS/Section 404 Permit Application.
4. The cost of the 2B-2 alternative using the DOT's freeway criteria is: \$93,240,000

FACT—Estimated Construction Costs in the DEIS:

The estimated construction costs of alternatives include the costs of preliminary engineering, construction engineering, utility relocation, acquisition of property for right-of-way, and mitigating environmental impacts. The costs of the build alternatives would range between approximately \$61 million and \$81 million (in 2011 dollars). (DEIS pages S15 and S18)


QUESTION:

- FOAA Documents #000391/000392 are dated 12.06.11. DEIS signed by Commissioner Bernhardt on 3.07.12. Why was the lower cost included in the DEIS, but the lower-cost-design was not?

000431

MaineDOT

Memo

To: I-395/Route 9 Transportation Study Project File
From: Ken Sweeney, P. E. - Chief Engineer 
CC: Russell Charette, Project Manager
Date: January 30, 2012
Re: Planning Level Cost Estimates for the Alternatives 2B-2, 5A2B-2, 5B2B-2

The build alternatives have been designed as a two-lane road within a two-lane right-of-way using MaineDOT's criteria for freeways. The latest estimate to construct the build alternatives dated December 2011 range from approximately \$93 million for Alternative 2B-2 to \$122 million for Alternative 5A2B-2.

After reviewing the cost estimates for the build alternatives, the cost estimates should be reduced by one-third, for planning purposes moving forward. The basis for this one-third reduction includes, but is not limited to:

- Reducing the number of structures that need to meet 1.2 stream bankfull structure design would reduce structure costs.
- Using a rolling design, earthwork quantities would be reduced by approximately one-third
- Recognizing that lump sum items – drainage, signing and pavement marking, erosion and sedimentation control, maintenance and protection of traffic, and mobilization – were calculated as a percentage of construction, additional savings would be realized for these items
- Reducing the contingency percentage from 20% to 10%.
- Reducing the design engineering and construction engineering services, based on the type of construction, from 16% to 10%.

FACT—Memo established the one-third cost reduction:

- After reviewing the cost estimates for build alternatives, the cost estimates should be reduced by one-third, for planning purposes moving forward.
- The basis of the \$61 million dollars stated in the DEIS.
- So far it has been established that there is a discrepancy between the applicable design standard and the cost of alternative 2B-2 in the DEIS.

- **Note:** The cost differences were addressed in questions to the DEIS; the MDOT decided that the question was not substantive and offered no comment.

Attachment: Comments and Public Meeting Transcripts

DEIS Comment/Question # 4.

Submitted by: Larry Adams, a Brewer resident, on April 13, 2012

Cost of alternatives in this Study:

"The estimated cost of 2B-2 construction is \$90 million dollars." (October 2011 Interagency Meeting Minutes) "MDOT estimates the project will cost \$70 million to \$101 million." (BDN 1/10/2012) At \$90 million dollars, alternative 2B-2 at 6.1 miles in length will cost \$14.75 million dollars per mile. "Ray responded that the DOT has seen recent average construction costs of \$7-8 million per mile." "For a 10 to 11-mile connector as studied here, construction would likely cost \$70 to \$80 million." (PAC Meeting 11/19/2008) "Route 3EIK-2... Developed over the past few weeks, the new route features 10.6 miles of new roadway at an estimated construction cost of \$40 million." (BDN article 5/01/2003) "At the national level, we saw a major spike in the price of asphalt as a result of the 2005 hurricane season and its impacts on the petroleum industry, which certainly revealed our national vulnerabilities related to energy supplies. Consequently, MaineDOT reported in 2010 that its construction costs had increased by a troubling 60 percent over the previous five years, further contributing to the challenge of maintaining an aging system." (Connecting the D.O.T.S September 2011) The 3EIK-2 alternative would have cost \$40 million dollars in 2003, a ten to eleven mile connector would have cost \$70 to \$80 million dollars in 2008 and now in 2012 the 2B-2 alternative, which is 4.5 miles less in overall length than the 3EIK-2 route will cost an estimated \$70 to \$101 million or is it \$90 million dollars? The cost of asphalt is directly tied to the price of crude oil and current events, it will only go up in the future and even now the price of gas is \$4.00+/gallon.

"The estimated construction costs of alternatives include the costs of preliminary engineering, construction engineering, utility relocation, acquisition of property for right-of-way, and mitigating environmental impacts. The costs of the build alternatives would range between approximately \$61 million and \$81 million (in 2011 dollars)". (DEIS pages s15/s18) Since 2B-2 has the lowest construction costs of the three remaining alternatives, the cost estimate to construct 2B-2, per the DEIS, is \$61 million dollars.

- Why the large disparity from \$61 million dollars in March of 2012 from \$90 million dollars in October of 2011 or more as reported in the BDN in January 2012?
- What will be the cost in real 2014 dollars when this 2B-2 alternative is slated to go to construction if selected?
- Is this \$90 million dollar estimate from October of 2011 even realistic or will this end up costing more like \$120 million dollars or more if 2B-2 goes to construction two or three years from now?
- At what point will the MaineDOT/FHWA realize that this project will be too costly for the limited benefits that it delivers?

What is a Benefit-to-Cost Ratio?

The following is a simplified example showing how Benefit/Cost analysis is applied to your everyday life; you do it all the time without even thinking.

A Benefit/Cost ratio is based on a simple mathematical equation: Benefit divided by Cost; or B/C.

- The number 1.0 is the baseline or threshold to the Benefit/Cost ratio analysis.
- A Benefit/Cost Ratio equal to or greater than ($=$ to/or $>$) 1.0 is considered a good investment.
- Projects with a Benefit-to-Cost ratio greater than 1.0 have greater Benefits than Costs; hence they have positive net benefits. The higher the ratio, the greater the Benefits relative to the Costs.
- A Benefit/Cost Ratio less than ($<$) 1.0 when Cost exceeds Benefits is not a good investment.

Say you buy a bag of chips with a suggested retail price @\$2.99 at your favorite store:

- Benefit \$2.99 bag of chips/\$2.99 Cost = B/C Ratio of 1.000 (good investment)

Say you go to another store that has that same bag of chips but on sale for \$2.00:

- Benefit \$2.99 bag of chips/\$2.00 Cost = B/C Ratio of 1.495 (better investment)

Say you now go to the movies and the same bag of chips is marked-up to \$3.50:

- Benefit \$2.99 bag of chips/\$3.50 Cost = B/C Ratio of 0.854 (bad investment)

Applications of Benefit-Cost Analysis when considering Transportation Projects:

In highway decision-making, BCA may be used to help determine the following: Whether or not a project should be undertaken at all (i.e., whether the project's life-cycle benefits will exceed its costs). (FHWA) <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm>

The benefit-cost ratio (BCR) is often used to select among competing projects when an agency is operating under budget constraints. In particular, use of the BCR can identify a collection of projects that yields the greatest multiple of benefits to costs, where the ability to incur costs is limited by available funds. (FHWA) <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm>

BCR is a grading factor when considering the project's merit. At the Federal Level, projects from all 50 states are grouped together as one group and prioritized against each other for the limited available Federal funds. The Federal Highway Trust Fund Highway Account will be exhausted in FY15.

Benefit-cost ratio (BCR): The BCR is frequently used to select among projects when funding restrictions apply. In this measure, the present value of benefits (including negative benefits) is placed in the numerator of the ratio and the present value of the initial agency investment cost is placed in the denominator. The ratio is usually expressed as a quotient (e.g., \$2.2 million/\$1.1 million = 2.0). For any given budget, the projects with the highest BCRs can be selected to form a package of projects that yields the greatest multiple of benefits to costs (see box, page 24).

(FHWA) <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm#ref2>

000185

Stewart, Jean

From: Charette, Russ
Sent: Thursday, August 02, 2012 1:03 PM
To: Sweeney, Ken
Cc: Thomson, Herb
Subject: FW: 395 - Net Present Value and B/C Ratio of Transportation Benefits of 2B-2
Attachments: I-395 - Route 9 study net present value bc ratio 08022012.xlsx

Ken,

Attached please find a Benefit/Cost analysis for Alternative 2B-2. The B/C number calculated is 1.1. A 7% discount rate was used based on guidance material from FHWA and the White on calculation of B/C numbers. (references: <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer03.cfm>, & http://www.whitehouse.gov/omb/circulars_a094)

The B/C number does not include the costs for maintenance nor the added benefits from job creation.

The additional transportation benefits beyond the 20 year design period are also not included in the benefit side of transportation.

I also ran a sensitivity analysis on the discount rate. At an 8% discount rate, the B/c number is equal to 1.0. Using a discount rate lower than 7% increases the B/C number above 1.1.

Please let me know if you have any questions, or need any changes.

Russ

Russell D. Charette, P.E.
Director, Mobility Management Division
Bureau of Transportation Systems Planning
MaineDOT 16 State House Station
Augusta, Maine 04333
Phone: 207-624-3238
Fax: 207-624-3301
E-Mail: Russ.Charette@Maine.Gov

From: Plumpton, William M. [<mailto:wplumpton@GFNET.com>]
Sent: Thursday, August 02, 2012 10:49 AM
To: Charette, Russ
Subject: 395 - Net Present Value and B/C Ratio of Transportation Benefits of 2B-2

Russ:

Good morning. Attached please find an .xlsx file with our analysis of the net present value and B/C ratio of the transportation benefits of 2B-2. Considering the reductions and savings in crashes, VHT, and VMT over the No-build, we come up with a B/C ratio of 1.1. This doesn't include the benefit of jobs creation or the transportation benefits that will extend beyond 2035.

1

Let us know if you have questions or would like us to do something more or different. Thanks. Bill

000186

I-395/Route 9 Transportation Study Environmental Impact Statement
Net Present Value Analysis and Benefit-Cost Ratio of Modeled Transportation Benefits
 August 1, 2012

Inputs

0.07 Percent Discount Rate
 20 Years Analysis Period

References: <http://www.fhwa.dot.gov/infrastucture/transportation/primers03.cfm>, http://www.whitehouse.gov/omb/circulars_0084

| Calendar Year | Project Life | Study Year/ Exponent | Construction Costs | | Benefits | |
|---------------|--------------|-------------------------|--------------------|---------------|--------------|---------------|
| | | | Current Year | Present Value | Current Year | Present Value |
| 2015 | | 0 | \$61,000,000 | \$61,000,000 | 0 | 0 |
| 2016 | 1 | 1 | 0 | 1.00000 | 4,167,500 | 4,167,500 |
| 2017 | 2 | 2 | 0 | 0.87344 | 4,386,842 | 3,831,638 |
| 2018 | 3 | 3 | 0 | 0.81630 | 4,606,184 | 3,760,018 |
| 2019 | 4 | 4 | 0 | 0.76290 | 4,825,526 | 3,681,371 |
| 2020 | 5 | 5 | 0 | 0.71298 | 5,044,868 | 3,596,921 |
| 2021 | 6 | 6 | 0 | 0.66634 | 5,264,211 | 3,507,766 |
| 2022 | 7 | 7 | 0 | 0.62275 | 5,483,553 | 3,414,881 |
| 2023 | 8 | 8 | 0 | 0.58201 | 5,702,895 | 3,319,137 |
| 2024 | 9 | 9 | 0 | 0.54393 | 5,922,237 | 3,221,304 |
| 2025 | 10 | 10 | 0 | 0.50835 | 6,141,579 | 3,122,067 |
| 2026 | 11 | 11 | 0 | 0.47509 | 6,360,921 | 3,022,028 |
| 2027 | 12 | 12 | 0 | 0.44401 | 6,580,263 | 2,921,716 |
| 2028 | 13 | 13 | 0 | 0.41496 | 6,799,605 | 2,821,594 |
| 2029 | 14 | 14 | 0 | 0.38782 | 7,018,947 | 2,722,069 |
| 2030 | 15 | 15 | 0 | 0.36245 | 7,238,289 | 2,623,489 |
| 2031 | 16 | 16 | 0 | 0.33873 | 7,457,632 | 2,526,158 |
| 2032 | 17 | 17 | 0 | 0.31657 | 7,676,974 | 2,430,333 |
| 2033 | 18 | 18 | 0 | 0.29586 | 7,896,316 | 2,336,235 |
| 2034 | 19 | 19 | 0 | 0.27651 | 8,115,658 | 2,244,047 |
| 2035 | 20 | 20 | 0 | 0.25842 | 8,335,000 | 2,153,922 |

Benefits and Assumptions

| Benefits (2011\$) | |
|--------------------|---|
| \$5,117,000 | reduction in crash costs |
| \$417,000 | reduced vehicle operating costs |
| \$2,801,000 | travel time savings |
| \$8,335,000 | |
| \$4,167,500 | |
| \$219,342.11 | (half of total benefits, divided by 19 years) |

Assumptions:

1. \$8,335,000 in benefits would occur as of design year 2035. However, a lower level of annual benefits would begin in year 1 of project life. Because the amount of benefits was not modeled separately for each project year, it was assumed that 1/2 of design year benefits would occur in project year 1, and increase linearly until 2035.
2. The salvage value of right-of-way was not subtracted from the total project cost. Subtracting the salvage value would decrease the project cost and increase the positive benefit-cost ratio.

Notes:

1. Benefits calculated to design year of 2035, however roadway is expected to exist past 2035 and would continue to provide transportation benefits.
2. Other non-transportation benefits, such as employment and related economic development supported by improved mobility and access, are not accounted for and would provide additional benefits for the public.

| Installation | | Benefits |
|-----------------------------|------------|------------|
| SUM OF PRESENT VALUES | 61,000,000 | 61,424,195 |
| AVERAGE ANNUAL EQUIVALENTS | 5,381,279 | 5,798,009 |
| BENEFIT-COST RATIO | 1.1 | |
| AVG ANN EQUIV/LMT NET BNFTS | \$416,731 | |

FOAA Documents #000185-000187 established Benefit-to-Cost Ratio @ 1.1 for 2B-2 alternative based on the cost of a future downgrade in design from freeway criteria to rolling criteria following conclusion of the NEPA process; this design change is found only in FOAA documents—the MDOT has yet to advise the public of this change:

- A Benefit/Cost ratio of 1.1 results in a positive/good investment, BUT how does that fit the Commissioner's statement "...to limit adding new infrastructure to that which is shown to provide overwhelming benefits?"
- MDOT analysis was based on an installation cost of \$61 million dollars – not the \$93,240,000 for a freeway criteria designed 2B-2 as stated in FOAA Document #000392; MDOT analysis based on future lower cost of "rolling criteria" design following conclusion of NEPA:

Average Annual Equivalents may have used to achieve the MDOT B/C ratio @ 1.1 (1.077 actual).

Using Present Values: Benefits @\$61,424,195/ Installation Cost @\$61,000,000 = B/C Ratio @1.007

Since a Benefit/Cost Ratio is simple mathematics, knowledge on how to compute benefits in FOAA Document #000187 is not necessary. Present value of Benefits established by MDOT @\$61,424,195.

Benefit/Cost Ratio of 2B-2 using MDOT's freeway criteria:

| | | |
|--|----------------------------|--------------------|
| (MDOT established FOAA Document #000187) | Benefits: \$61,424,195 | |
| ----- | | = B/C Ratio @0.659 |
| (2B-2 Cost as per FOAA Document #000392) | Installation: \$93,240,000 | |

- A Benefit-to-Cost Ratio of 0.659 makes this project no longer viable when using the actual cost of 2B-2 using MDOT's freeway criteria.

OR use \$93 million instead of \$93,240,000:

| | | |
|--|----------------------------|--------------------|
| (MDOT established FOAA Document #000187) | Benefits: \$61,424,195 | |
| ----- | | = B/C Ratio @0.660 |
| (2B-2 Cost as per FOAA Document #000431) | Installation: \$93,000,000 | |

- A Benefit-to-Cost Ratio of 0.660 makes this project no longer viable when using the actual cost of 2B-2 using MDOT's freeway criteria.
- Plug either \$93,240,000 or \$93 million into the formula and you get B/C ratios of 0.659/0.660 and that is no longer a good investment; and no longer a Benefit-to-Cost Ratio that you can base this project on.

"...the cost estimates should be reduced by one-third..." (FOAA Document #000431):

Using the \$93,240,000 cost established for 2B-2 freeway criteria in FOAA Document #000392:

- $\$93,240,000 / 3 = \$31,080,000$ (one-third of \$93,240,000)

$\$93,240,000 - \$31,080,000 = \$62,160,000$ (one-third reduction per FOAA Document #000431)

(OR)

Using the \$93,000,000 cost established for 2B-2 freeway criteria in FOAA Document #000431:

- $\$93,000,000 / 3 = \$31,000,000$ (one-third of \$93,000,000)

$\$93,000,000 - \$31,000,000 = \$62,000,000$ (one-third reduction per FOAA Document #000431)

- Neither of these above two computations equates to the \$61,000,000 cost used in the Benefit/Cost analysis of FOAA Documents #000185-000187 and as stated in the DEIS.
- There seems to be a mathematical discrepancy of between \$1,000,000 and \$1,160,000 for the MDOT established installation cost of \$61,000,000.

The B/C using accurate one-third reductions @ \$62,000,000 and \$62,160,000:

- If Cost is greater than Benefits—the project is no longer viable.
- MDOT established the present value of Benefits per FOAA Document #000187 @ \$61,424,195.
 - Cost @\$62,000,000 > Benefits @ \$61,424,195 or a B/C ratio @0.991 – not viable.
 - Cost @\$62,160,000 > Benefits @ \$61,424,195 or a B/C ratio @0.988 – not viable.
- Computing the Benefit-to-Cost Ratio with the MDOT established present value of Benefits @ \$61,424,195 and the present value installation costs reduced by one-third results in B/C Ratios @ 0.988 and 0.991.

So where did the \$61,000,000 come from?

- Seems like after the initial one-third reduction, the installation cost was magically again reduced to get installation costs below the benefits so as to obtain an acceptable B/C ratio. Depending on which installation cost was used, \$93,240,000 or the \$93 million, another reduction of \$1,000,000 to \$1,160,000 was needed to get to that \$61,000,000 cost used in the FOAA Document #000187 Benefit-Cost Ratio analysis. Was this just a mistake, a rush to judgment, sloppy engineering or is there more to this than just a simple miscalculation?
- “Economics 101 provides that a benefit-to-cost ratio of 1.0 [\$1 in benefits for every \$1 invested] is a viable benefit cost ratio,” Charette said. (BDN 4.18.12) Maybe Mathematics 101 would provide an explanation for that unaccountable \$1,000,000 to \$1,160,000 that just so happens to favor the MDOT Benefit-to-Cost analysis.
- And that is why the \$61 million dollar price tag of the “rolling design” is so important. \$61 million gives an acceptable B/C ratio @1.1; the \$93,240,000 cost of a “freeway criteria design” only returns a B/C ratio @0.659 and is no longer a viable project. The MDOT needs the lower cost of the future downgraded design to justify the construction of this connector; without lowering the cost – the B/C ratio is unacceptable. The project cannot proceed to selection without a B/C ratio = to/or >1.0 and even an acceptable B/C ratio @1.1 may be too low of a grading factor when setting priorities for Federal Funding.
- In my opinion, this project is completely money-driven and nothing else matters; not the environment, not the design of the connector, not safety, not the displaced residents and especially not the individual behind this keyboard. Costs will continue to be reduced to make the project appear to be more viable.

One more irregularity: What about the cost of mitigation?

Go back and view FOAA Document #000392 and notice that there is no dollar figure under the Mitigation Column for any of the three remaining alternatives and that conflicts with the DEIS.

The estimated construction costs of alternatives include the costs of preliminary engineering, construction engineering, utility relocation, acquisition of property for right-of-way, and mitigating environmental impacts. The costs of the build alternatives would range between approximately \$61 million and \$81 million (in 2011 dollars). (DEIS pages S15 and S18)

- The DEIS statement “and mitigating environmental impacts” cannot be true since the cost estimates were reduced by one-third as stated clearly in FOAA Document #000431 and that cost according to FOAA Document #000392 was \$93,240,000 with no mitigation costs shown. Due to the large environmental impacts it should be expected that the cost of mitigation will be high and it doesn’t appear that these costs have been included in their construction estimates.

Back to the Commissioner's previous statement:

"Our responsibility going forward is to manage our existing obligations within our existing budget, and to limit adding new infrastructure to that which is shown to provide overwhelming benefits. We know federal transportation funding will continue to decrease, and the era of special earmarks for transportation projects is over."

Benefit-to-Cost Ratio of the Wiscasset Bypass Study cancelled in August 2011:

http://www.maine.gov/mdot/wcs/documents/phase2/MainReport_WiscPhase2.pdf

September 2009 Wiscasset Bypass Phase II Report page 27:

4.4. Summary Comparison of Alternatives – Part 3 (Transportation and Cost Considerations)

| Criteria | No Build | N8c | N2f | N2a |
|--|------------------|-------------------|-------------------|----------------------|
| Traffic Safety & Mobility | | | | |
| Change in Annual Crashes, 2030 | 0 | -9 | -15 | -8 |
| Change in VMT, 2030 | 0 | 9,700,000 | 8,500,000 | 9,300,000 |
| Change in VHT, 2030 | 0 | -1,130,000 | -1,090,000 | -1,030,000 |
| Estimated Capital Cost, \$M (2006) ⁸ | \$1.1 | \$82.25 | \$78.95 | \$81.75 ⁸ |
| Life Cycle Cost, \$M (100 Years) | N.A. | \$136.01 | \$123.88 | \$122.02 |
| Benefit-to-Cost Ratio (Life Cycle) | N.A. | 2.46 | 2.43 | 2.27 |
| Mitigation Costs (Included in Estimated Capital Cost, Life Cycle Cost & Benefit-to-Cost Above) | | | | |
| Wetland, \$M | N.A. | \$1.35 | \$1.45 | \$2.05 |
| Wildlife, \$M | N.A. | \$1.40 | \$1.80 | \$1.70 |
| Historic, \$M | \$0.02 | \$0.10 | \$0.23 | \$0.06 |
| Constructability | | | | |
| Cofferdam Pier Construct Time (Weeks) | N.A. | 32 | 20-30 | 6 |
| Earthwork (Cubic Yards) | | | | |
| Cut (Cubic Yards) | 0 | 920,000 | 1,150,000 | 965,000 |
| Fill (Cubic Yards) | 0 | 275,000 | 420,000 | 400,000 |
| Excess Earthwork (Cubic yards) | 0 | 645,000 | 730,000 | 565,000 |
| Operations | Mobility Decline | Improved Mobility | Improved Mobility | Improved Mobility |

⁸ Costs updated from DEIS to include new Clark's Point right-of-way and historic preservation costs.

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- The Commissioner cancelled a Study in August of 2011 with a Benefit-to-Cost-Ratio @ 2.27, 2.43 and 2.46, BUT moves forward to complete the I-395/Route 9 Connector Study promoting a preferred alternative with a Benefit-to-Cost-Ratio of only 1.1?
- Don't forget, alternative 2B-2 met only one out of five (20%) Purpose & Needs in April 2009.
- Many wonder why the MDOT continues to spend one more cent on a Study that teeters around being not viable. Is underwhelming a word?

What is the engineering basis for the "one-third" reduction?

- What is the engineering basis for the "one-third" reduction in price as stated in the January 30, 2012 Memo, FOAA Document #000431?
- Are we to be impacted by an engineer's opinion instead of real facts? Where are the facts to back up the one-third reduction in costs?

Excerpt from FOAA Document #000431:

After reviewing the cost estimates for the build alternatives, the cost estimates should be reduced by one-third, for planning purposes moving forward. The basis for this one-third reduction includes, but is not limited to:

- Reducing the number of structures that need to meet 1.2 stream bankfull structure design would reduce structure costs.
- Using a rolling design, earthwork quantities would be reduced by approximately one-third
- Recognizing that lump sum items – drainage, signing and pavement marking, erosion and sedimentation control, maintenance and protection of traffic, and mobilization – were calculated as a percentage of construction, additional savings would be realized for these items
- Reducing the contingency percentage from 20% to 10%.
- Reducing the design engineering and construction engineering services, based on the type of construction, from 16% to 10%.

Excerpt from FOAA Document #000392:

000392

Cost Estimate Summary for Range of Alternatives

| Alternative | Construction | Utility Relocation | Engineering & Inspection | Right of Way | Mitigation | Total |
|-------------|------------------|--------------------|--------------------------|-----------------|------------|-------------------|
| 2B-2 | \$ 75,491,276.60 | \$ 1,578,100.00 | \$ 12,078,600.00 | \$ 4,084,912.41 | \$ - | \$ 93,240,000.00 |
| 5A2B-2 | \$ 97,629,921.84 | \$ 3,130,600.00 | \$ 15,620,780.00 | \$ 5,205,118.05 | \$ - | \$ 121,590,000.00 |
| 5B2B-2 | \$ 79,879,364.36 | \$ 9,345,600.00 | \$ 12,780,700.00 | \$ 9,659,718.99 | \$ - | \$ 111,670,000.00 |

- The costs stated in FOAA Document #000392 seem pretty specific, however the one-third cost reduction in FOAA Document #000431 seems arbitrary at best.

FHWA concerns with underestimation of project construction and development costs:

Agency costs: The assignment of monetary values to the design and construction of a project is perhaps the easiest valuation concept to understand. Engineers estimate these costs based on past experience, bid prices, design specifications, materials costs, and other information. Care must be taken to make a complete capital cost estimation, including contingencies and administrative expenses such as internal staff planning and overhead costs. A common error in economic analysis and budgeting is the underestimation of project construction and development costs. Particular care should be used when costing large or complicated projects.

(FHWA Documentation) <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm>

Economic Analysis and the National Environmental Policy Act Process:

Any State or local project or activity receiving Federal funds or other Federal approvals must undergo analysis of a comprehensive set of its social, economic, and environmental impacts under the provisions of the National Environmental Policy Act of 1969 (NEPA). The findings of the NEPA analysis have a major influence on the selection of a particular project or project alternative.

When an environmental impact statement (EIS) is prepared under NEPA and economic, social, natural, or physical environmental effects are interrelated, then the EIS must discuss all of these effects on the human environment. If a benefit-cost analysis (BCA) is prepared to assist in project selection, it should be incorporated by reference or appended to the EIS as an aid in evaluating the environmental consequences. This information will complement other information assembled in the EIS. However, for purposes of complying with NEPA, the merits and drawbacks of the various alternatives need not be displayed in a monetary BCA, and typically are not.

Accordingly, information revealed in a BCA can inform the NEPA process. Similarly, information on the direct costs or benefits of environmental impacts of a project measured in the NEPA review should be incorporated into the economic analysis.

(FHWA Documentation) <http://www.fhwa.dot.gov/infrastructure/asstmgmt/primer05.cfm>

- Benefit-to-Cost analysis was not included in the DEIS.
- Cumulative Environmental Effects: streams-4,900/feet; wetlands-182/acres; floodplains-26/acres; forest vegetation-602/acres; wildlife habitat-873/acres. 54 properties will be directly impacted while eight families watch bulldozers raze their homes. Impacted communities will lose combined revenues of \$62,000/year from directly impacted properties/residences. Wouldn't an accurate Benefit-to-Cost Ratio have been a useful tool to evaluate this project with so many significant negative impacts?
- How can the 2B-2 alternative be effectively evaluated by Cooperating Agencies, such as the US Fisheries and Wildlife Service and the Army Corps of Engineers, charged with permitting and approval without knowledge of an accurate Benefit-to-Cost Analysis?

- Go back and think once again about the Commissioner's statement: "Our responsibility going forward...to limit adding new infrastructure to that which is shown to provide overwhelming benefits."
 - The benefits of the 2B-2 alternative are not overwhelming no matter what cost you use.
 - However, future development along Route 9 in the study area can impact future traffic flow and the overall benefits of the project. (DEIS s19)

More interesting quotes:

http://www.pressherald.com/news/bypass-plan-goes-nowhere-in-wiscasset-state-kills-it_2011-08-02.html

"Transportation Commissioner David Bernhardt said Monday that his decision to end the bypass study had little to do with the discovery of the nest and everything to do with the estimated \$100 million price of the project."

Bernhardt, a 26-year veteran of the MDOT, was chosen to become commissioner by Gov. Paul LePage in January. Before being confirmed by the Legislature, he told the Transportation Committee that he would oppose any new bond initiatives.

"This is the second transportation planning effort in the midcoast to be canceled by the LePage administration. In March, Bernhardt announced that the state had suspended funding for the Gateway 1 project – \$2.4 million had already been spent on the long-term land-use and transportation plan for 110 miles of Route 1 from Brunswick to Prospect."

Final Thoughts:

- An unviable, deficient and impractical alternative was selected in complete isolation outside of public scrutiny without sufficient comprehensive planning and the opportunity for meaningful public input and guidance.
- Our limited State/Federal tax revenues need to be spent wisely repairing the existing infrastructure, not on this I-395/Route 9 Connector project; MDOT's 2B-2/preferred alternative only met one out of the five (20%) Purpose & Needs in April 2009.
- "Adding more miles to our transportation system in this current fiscal environment doesn't make financial sense," said Bernhardt, "Our responsibility going forward is to manage our existing infrastructure within our existing budget." (8.01.11)

http://www.maine.gov/tools/whatsnew/index.php?topic=DOT_Press_Releases&id=279591&v=article

Please support the NO-BUILD option for the I-395/Route 9 Connector.

Thank you for your time and consideration, Larry Adams