

# DRAFT CCMPO 2030 MTP Financial Plan

6/14/2010

## Introduction

As discussed in the introduction to the overall plan, the MTP must incorporate a financial section that estimates how much funding over the life of the plan will be needed, how much will be available for the recommended transportation investments, and the costs to maintain and operate the existing system. The financial section must outline how the CCMPO can reasonably expect to fund all included projects and programs within a fiscally constrained environment, drawing on all anticipated revenues from the federal and state governments, regional or local sources, the private sector and user charges.

This financial element, or plan, is a critical component of the overall plan. By requiring the plan to remain firmly grounded in fiscal reality, it prevents it from becoming a wish-list of every potential project. The constraints foster careful consideration of how competing values and goals will be incorporated into the region's transportation future.

Federal regulations establish the requirement for the financial plan in *23 CFR 450.322(f)(10)*<sup>1</sup>. The operative requirements of that regulation are summarized here. The adopted MTP shall include:

- (10) *A financial plan that demonstrates how the adopted transportation plan can be implemented. Key components of this plan to include:*
  - (i) *System-level estimates of costs and revenues to adequately operate and maintain Federal-aid highways and public transportation.*
  - (ii) *Agreed upon estimates of funds that will be available to support plan implementation.*
  - (iii) *Recommendations on any additional financing strategies with strategies for ensuring their continued availability.*
  - (iv) *Funding to include all federally funded projects, both highway and transit. Projected funds to reflect "Year of Expenditure dollars." (YoE)*

Based on these requirements, the financial plan is intended to be in direct support of the MTP as a whole. It is not intended to cover every dollar spent for transportation at any level of government or by any entity. The MTP guides federally funded transportation investments managed and directed by the CCMPO in cooperation with other stakeholders.

The federal regulations require assessment of system "operating and maintenance" needs. These are intended to reflect "capital maintenance" also sometimes described as "system preservation" expenditures. The preservation costs do not include routine maintenance activities such as street sweeping, snow plowing, lighting, etc. Part 2 of the financial plan below includes detailed information on how the system preservations costs were calculated.

The federal regulations include a provision identifying public transportation operating costs as one of the components required for inclusion in the financial plan. Transit operating funds typically originate from non-federal sources and so they are not directly subject to the limitations

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<sup>1</sup> For more details on federal regulations regarding MPO long range planning, see [http://edocket.access.gpo.gov/cfr\\_2009/aprqr/23cfr450.322.htm](http://edocket.access.gpo.gov/cfr_2009/aprqr/23cfr450.322.htm)

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of the MTP fiscal constraint, but their availability is a critical ingredient in the ability to put transit capital assets, which frequently are federally funded, to work.

The financial projections in this chapter extend 25 years to the MTP planning horizon of 2035. The scenario planning exercise went out to the year 2060, but this horizon is not used for the detailed MTP project recommendations and financial plan due to increased uncertainty of forecasting 50 years into the future. The 25 year plan horizon is well established from previous CCMPO long range planning cycles.

This financial plan includes three parts:

1. The overall level of fiscal constraint including projection of future transportation funding in Chittenden County and factors that are anticipated to affect this.
2. The base level of investment required for system preservation as called for under 23 CFR 450.322(f)(10)(i).
3. An estimate and analysis of the costs associated with MTP recommended improvements themselves [**NOTE: Part 3 is NOT YET INCLUDED in this draft.** Recommended project costs will be calculated as plan recommendations are detailed].

## Financial Plan Part 1: Overall Constraint

CCMPO funds intended to be guided by the contents of the 2035 MTP are limited to federal transportation funds allocated to the Chittenden County metropolitan area under federal transportation acts, the current incarnation of which is the Safe, Accountable, Flexible, Efficient, Transportation Equity Act –a Legacy for Users (SAFETEA-LU). To the extent that state and/or local funds are allocated by the MTP, these are matching funds for the federal funds. The match is almost always split on an 80/20 basis, with the state/local share of the 20% match varying based on the nature of the project. Generally, it has been relatively straightforward to count on the availability of the required state/local match, so the only direct limitation on funding availability has been the federal funding stream.

The one important exception to this is transit funding. While the highway based transportation system receives a portion of its operating expenses through public funding, the majority of highway operating expenses are shouldered by its private users, who must purchase, maintain, and operate their own transportation vehicles. In contrast, the public transit system must generate public funds for the purchase, maintenance, and operation of its own fleet. The availability of transit operating funds is already a limiting factor on the ability of the region to absorb and effectively implement transit capital funds for improvements.

The CCMPO planning area does not access other sources of transportation funding such as tolls or private contributions, so the anticipated funding level for transportation projects in the metro area is effectively the federal funds plus state and local match.

The single most critical issue for establishing how much MTP funding will be available between 2010-2035 is therefore the future availability of federal funds. For the purposes of this plan, an estimate of available future funding has been developed based on the growth trend of statewide federal funding and CCMPO's historic share of statewide funding. This has been deemed to represent the most reasonable estimate of funding availability for two reasons:

- The actual funding available to the CCMPO over the past ten years has been quite

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volatile and has depended on the timing of specific projects. Statewide spending patterns exhibit a more consistent trend, and

- Earlier estimates of future funding availability based on federal guidance relied solely on historic growth in CCMPO funding and were deemed unrealistically high.

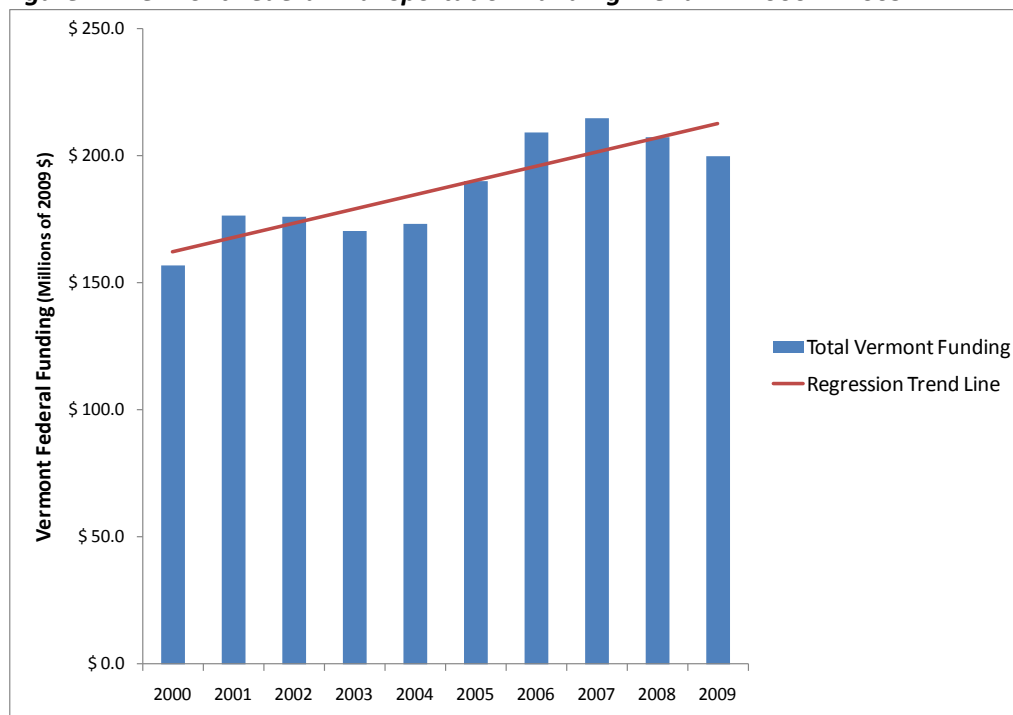
**Table 1: State of Vermont and CCMPO Federal Funds Obligations (Millions of 2009 \$)**

FY	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Statewide</b>	161.8	157.0	176.6	176.1	170.5	173.1	190.2	209.3	214.7	207.4	199.9
<b>CCMPO</b>	22.9	38.3	33.9	32.3	43.9	57.6	56.4	34.7	27.9	28.8	NA
<b>CCMPO Percent of Statewide</b>	14.1%	24.4%	19.2%	18.4%	25.7%	33.3%	29.7%	16.6%	13.0%	13.9%	NA

Note: Constant (2009) dollars calculated using ENR Construction Cost Index

Total statewide federal funding was projected for future years based on a linear regression<sup>2</sup> of the FY2000 – FY2009 statewide obligation history in Table 1 above<sup>3</sup>. The 2009 federal funding amounts do not include the American Recovery and Reinvestment (ARRA) funding as that source is not expected to continue in the future and should not be included in calculations of long-term funding availability. The trend based on the last ten years indicates an annual increase in statewide funding of \$5.6 million in 2009 constant dollars.

**Figure 1: Vermont Federal Transportation Funding Trend - FY2000-FY2009**



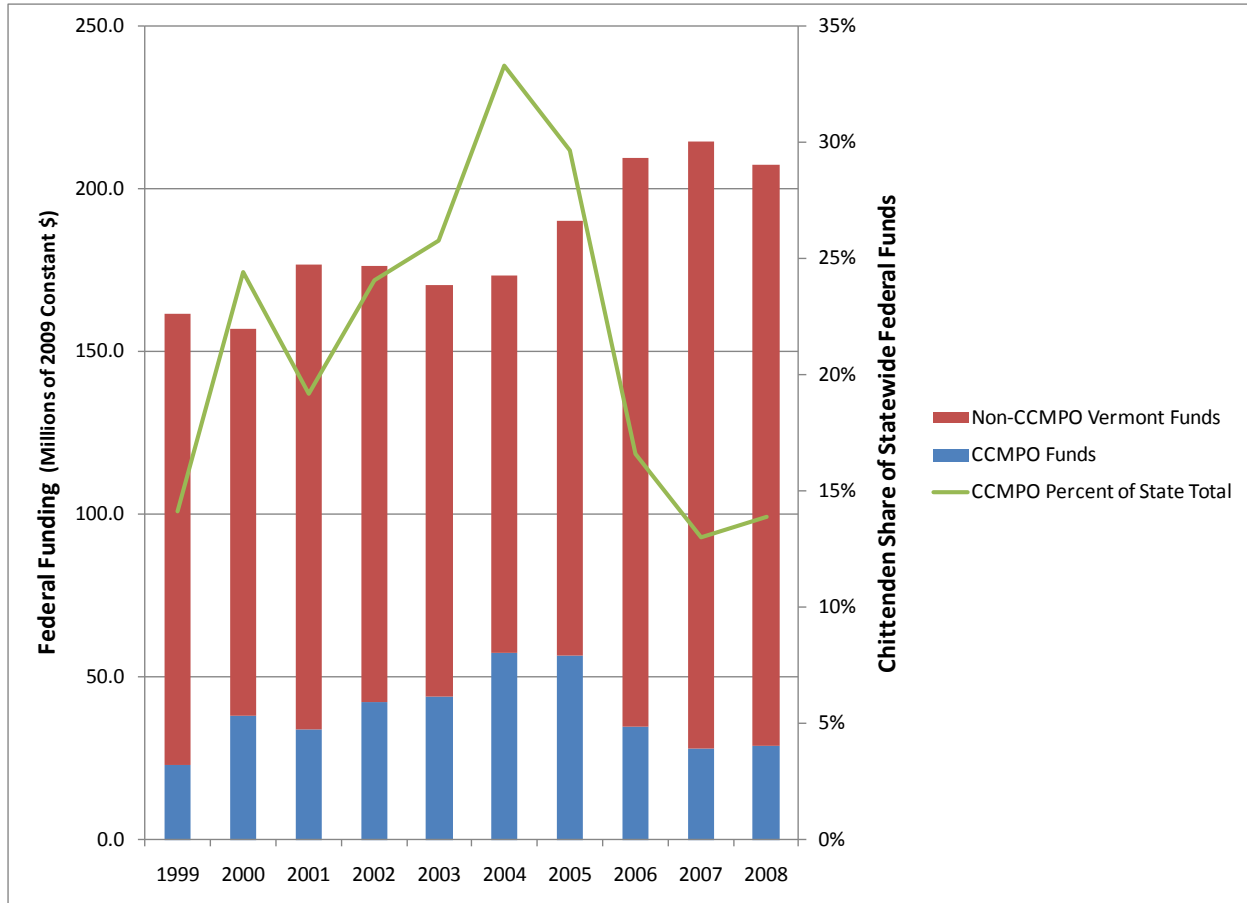
<sup>2</sup> Based on the historic funding the linear equation for statewide funding was found to be  $y = 5.619 * x + 162.195$  ( $r^2 = 0.76$ ) where  $x$  = years since 2000, and  $y$  = funding in millions of 2009 constant dollars.

<sup>3</sup> Statewide obligations consist of formula funding from the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) as well as congressional earmarks. From FY2004 onward, formula funds declined while earmarks increased, constituting approximately a third of all obligations from FY2005 through FY2008.

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The next step is to calculate CCMPO’s estimated share of the statewide federal funds. Figure 2 below illustrates CCMPO’s funding share history over the past 10 years of available data. CCMPO’s share of the total statewide funds has fluctuated between 13% and 33% between 1999 and 2008. Funding for large projects such as the US 7 Shelburne Rd and Kennedy Dr widening projects increased CCMPO’s share of statewide funding considerably in the FY2004-2005 period.

**Figure 2: CCMPO Share of Vermont Federal Transportation Funding – FY1999-FY2008**



The mean proportion of statewide federal funding going to CCMPO projects over the period was 21.4%<sup>4</sup>. This is fairly consistent with Chittenden County’s proportion of statewide population at 24.6% (US Census estimate, 2008) and Vehicle Miles of Travel (VMT) at 20.7% (VTrans, 2008) and appears to represent a good estimator of available funding in the County. As a result, CCMPO’s annual funding increase is estimated to be 21.4% of the \$5.6 million statewide increase, or approximately a \$1.2 million annual increase in 2009 constant dollars.

Based on Federal Highway Administration (FHWA) regulations, the CCMPO is required to estimate future funding, not only in constant (un-inflated) dollars, but in “Year of Expenditure” (YoE) dollars as well. This applies both to available funding and projected costs. A calculation

<sup>4</sup> This percentage is intended to represent a best estimate of available funding, and is in no way intended to be construed as a CCMPO “entitlement” or “rightful share” of statewide funds. A calculation of the median share of funding was very similar at 21.6%.

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of future inflation was estimated based on the historical pattern of costs. The Engineering News Record (ENR) construction cost index was used to calculate inflation rates more specific to transportation infrastructure projects than the general Consumer Price Index (CPI) inflation data. Table 2 shows the last 10 years of data on the ENR construction cost index and Figure 3 charts this information. The average rate of inflation was calculated at 3.15% based on the past 20 years of data (1990-2009)<sup>5</sup>. This rate is similar to trends in prices for general consumer goods. Although inflation rates can be quite volatile from year to year, the 3.15% average rate was deemed acceptable for long range planning purposes.

**Table 2: ENR Construction Cost Index History**

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average
ENR Index	6,059	6,221	6,343	6,538	6,694	7,115	7,446	7,751	7,966	8,310	8,570	
Annual Rate of Change	2.3%	2.7%	2.0%	3.1%	2.4%	6.3%	4.7%	4.1%	2.8%	4.3%	3.1%	3.15%

**Figure 3: ENR Construction Cost Index Inflation History**

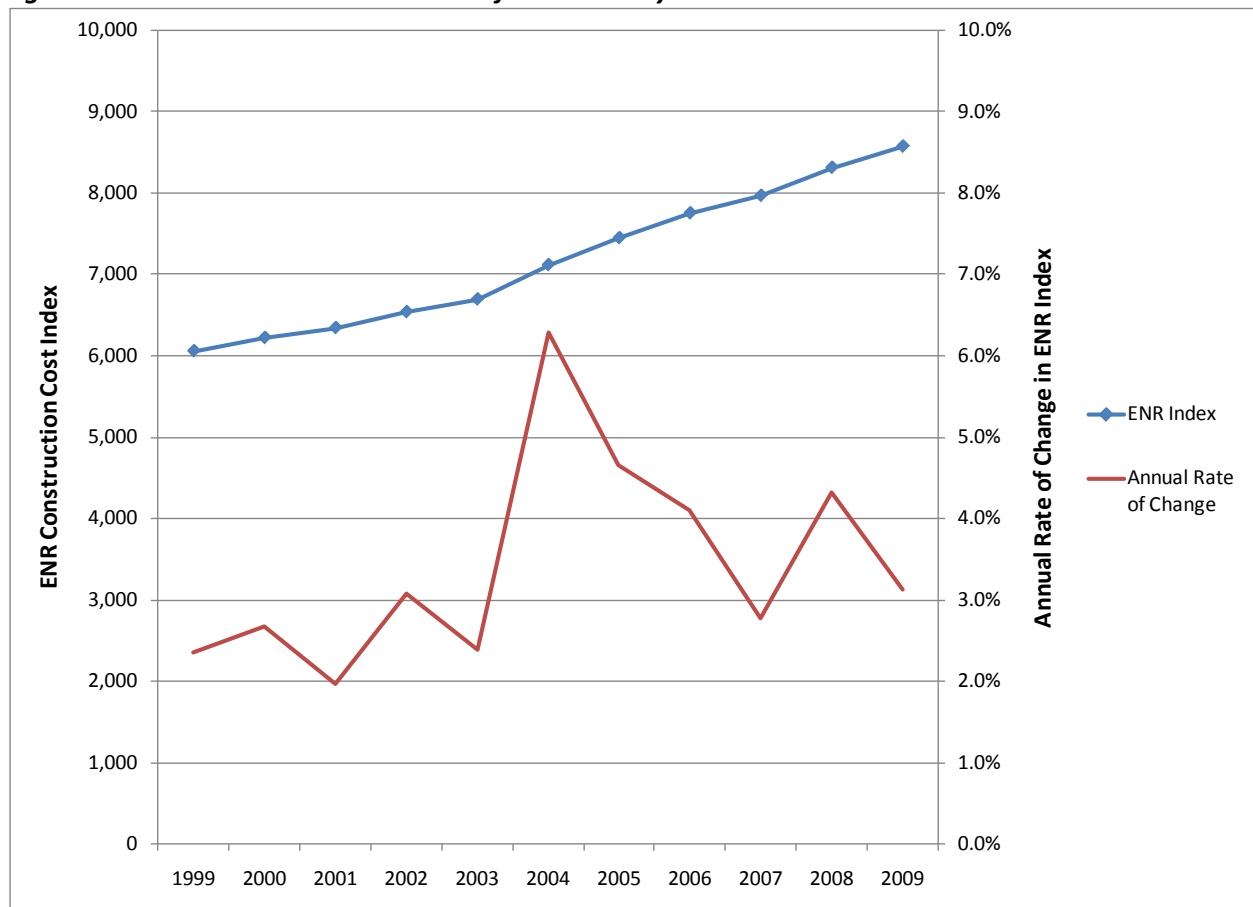


Table 3 below presents CCMPO’s estimated annual funding at five year intervals. This is based on growth in statewide federal funding of \$5.6 million in 2009 constant dollars and the County’s 21.4% historic share in statewide funds. In constant year 2009 dollars the annual 5-year

<sup>5</sup> The mean ENR cost index average annual rate was 3.15%. A median rate was also calculated at 2.92%. The mean rate was used for all inflation adjustment calculations.

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increments show a steady increase of several million dollars. The year-of-expenditure row, where 3.15% inflation is compounding over 25 years in combination with the constant dollar increase, shows significantly higher annual amounts with more than double the constant dollar amount by the year 2035.

**Table 3: CCMPO Projected Annual and Cumulative Funding in Five Year Increments (Millions of Dollars)**

	FY	2010	2015	2020	2025	2030	2035
<b>Annual</b>	Constant 2009 \$	46.7	52.7	58.7	64.8	70.8	76.8
	Year of Expenditure \$	46.7	61.6	80.1	103.1	131.6	166.7
<b>Cumulative</b>	Constant 2009 \$	46.7	298.4	580.1	891.9	1,233.7	1,605.6
	Year of Expenditure \$	46.7	323.6	685.5	1,153.0	1,751.6	2,512.1

### **Potential Adjustments to Projected Funding**

There are a number of factors that could change the projected level of funding detailed in Table 3 above. Sources of potential changes in funds available include:

#### **Bonding**

The Vermont Legislature passed Act 50 in 2009 covering the transportation capital program for the state<sup>6</sup>. Included in the act was a provision allowing a limited amount of transportation bonding for project costs. Included in Act 50 is a 2% increase in the fuel excise tax on both gasoline and diesel at the wholesale level plus additional fees. This is estimated to generate approximately \$22 million in additional statewide revenue in FY2010.

Based on historical data, the Chittenden County share of statewide transportation funds has varied between about 20% and 25% of statewide funds, and it seems reasonable that this would apply to the bonding funds as well. If 20 - 25% of this is available in Chittenden County, this would result in a total increase in perpetuity of \$4.5M - \$5.5M per year in transportation funds.

Table 4 illustrates the effect of an additional \$5 million per year available to the CCMPO funding stream above that in Table 3. For this analysis, the gas tax was included prior to inflation factors. Although the Act 50 did not index fuel taxes to inflation, it seems unlikely that the Legislature will allow the value of this revenue stream to become vanishingly contributory over the next 25 years.

The remainder of the calculations in this financial plan using available funding amounts adopt the values in Table 3 above as a more conservative estimate of available resources. The values in table 4 are shown for discussion purposes only.

<sup>6</sup> The full text of 2009 Act 50 is available here: <http://www.leg.state.vt.us/docs/2010/Acts/ACT050.pdf>

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**Table 4: CCMPO Annual and Cumulative Funding Including Bonding Revenue (Millions of Dollars)**

	FY	2010	2015	2020	2025	2030	2035
<b>Annual</b>	Constant 2009 \$	51.7	57.7	63.7	69.8	75.8	81.8
	Year of Expenditure \$	51.7	66.6	85.1	108.1	136.6	171.7
<b>Cumulative</b>	Constant 2009 \$	51.7	328.4	635.1	971.9	1,338.7	1,735.6
	Year of Expenditure \$	51.7	353.6	740.5	1,233.0	1,856.6	2,642.1

***Alternative/Innovative Funding Sources***

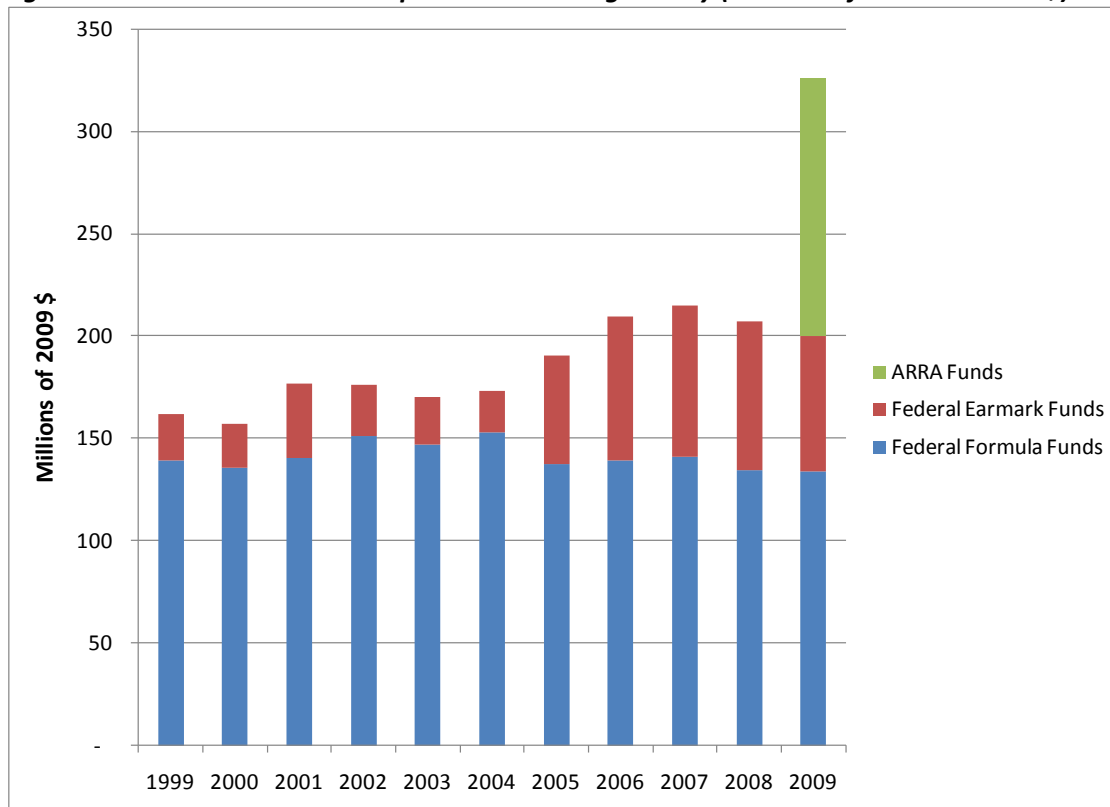
CCMPO has explored a variety of alternative transportation funding sources over the past several years. A special Blue Ribbon Commission on Innovative Finance (BRC) was established by the CCMPO Board in 2007 to provide recommendations regarding viable innovative finance strategies to advance the region's transportation needs. This effort was tied to the expectation that future transportation funding available from existing sources may be increasingly inadequate to serve the multitude of needs. The CCMPO Board endorsed several funding recommendations from the BRC in November 2009, including continuing to work collaboratively on creative financing of transportation projects, adding factors to the VTrans project prioritization process reflecting innovative finance participation in projects, and monitoring federal highway transportation reauthorization issues related to innovative finance.

Although CCMPO continues exploring the innovative finance recommendations, the potential revenue generation of new funding sources was deemed too uncertain to include in this estimation of future funds available.

***Stimulus***

The American Recovery and Reinvestment Act of 2009 (ARRA) provided a substantial boost in federal funding across a variety of federal programs, including transportation. In FY 2009 the amount of ARRA transportation funding obligated in Vermont was about \$125 million, which increased the state's federal funding by about 60% over normal programs. Much of this ARRA funding came through FTA and FHWA discretionary grant programs like TIGER (Transportation Investment Generating Economic Recovery). Figure 4 below illustrates the amounts funds Vermont received for general programs (formula funds), specific projects as directed by Congress (earmark funds), and ARRA funds for 2009.

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**Figure 4: Vermont Federal Transportation Funding History (Millions of 2009 Constant \$)**

The ARRA program provided a significant boost to transportation funding, but the program is not expected to be a long term source of additional transportation funds as it was a one-time measure. The financial projections in this document did not include ARRA funding in future year calculations for this reason.

### ***Potential Decreases in Funding***

The depletion of the national transportation trust fund has generated a great deal of uncertainty over future availability of federal funds for projects nationwide. Congress is debating the reauthorization of federal transportation programs with action expected in the coming months. There is a potential for this reauthorization or future actions to alter federal support for transportation projects available to Vermont.

Reductions in federal earmark funds sponsored by Vermont's Congressional delegation may also reduce the availability of federal transportation funds in Vermont. As shown in Figure 4 above, the state received about 30% of the total funds available as earmarks from FY2005 to the present (excluding the ARRA funds in FY2009). Congress and the Executive Branch have long discussed tighter control over the earmark process, but it is uncertain how or when these discussions may be resolved and how it could impact long term funding. Figure 6 in the Financial Plan conclusion section below includes two potential scenarios illustrating how reductions in earmark funds could affect funding available for new projects in Chittenden County.

In general, the above factors related to funding adjustments are too uncertain or short lived to significantly impact the quantitative estimates of future transportation funding for Chittenden County. The qualitative discussion is intended to highlight some of the uncertainties which may

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affect CCMPO's ability to fund transportation projects in the future.

## **Overall Funding Constraint Conclusion**

Funding for CCMPO transportation projects is presently dependent on federal funding, which is matched on an 80% federal / 20% non-federal basis at the state and local levels. Historically, CCMPO has accounted for 21.4% of the annual funds available statewide. The statewide funding level has increased by about \$5.5 million annually in 2009 constant dollars on a straight line basis. In Chittenden County this results in about a \$1.2 million constant dollar increase annually to a total of \$76.8 million in 2035. Additional funding sources, especially for transit operating funds will be critical for the preservation and expansion of transit services in the region.

## **Financial Plan Part 2: System Preservation Element**

The system preservation element, sometimes referred to as system "maintenance" is a fundamental component of the MTP financial plan. As directed by federal regulations, the estimate of funds available to implement new plan initiatives is the total constraint amount as detailed in Part 1 minus the funds necessary to preserve the existing investment in transportation infrastructure to an acceptable standard of service. Defining the acceptable standard and the appropriate programs to restore underperforming facilities and services is the purpose of this element of the financial plan.

Historically, the systematic effort to maintain and restore the existing transportation infrastructure reached a high level of emphasis with the advent of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). This federal act initiated the approach of addressing critical elements of the transportation infrastructure using formal management systems. ISTEA specifically mentioned six management systems: highway pavement, bridge, highway safety, traffic congestion, public transportation facilities and equipment, and intermodal transportation facilities and systems. These were often referred to in a shorthand fashion as: pavement (PMS), bridge (BMS), safety (SMS), congestion (CMS), public transportation (PTMS), and intermodal (IMS).

Of the original six, three are essentially asset management categories directly concerned with the preservation of the existing system (pavement, bridge, and public transportation), while the remaining three (safety, congestion, and intermodal) are outputs of the plan itself, representing improvements intended to address specific issues and opportunities for safety enhancements, congestion management, and intermodal connectivity identified in the plan.

Despite the genesis of these asset management systems now almost two decades ago and significant attempts to implement them, none of these systems are fully operational in the Chittenden County metropolitan area.

The original intent of the calculation of system preservation costs was to base CCMPO costs on VTrans management systems for pavement (highways) and bridges (structures). VTrans has previously developed performance criteria/targets for asset conditions and programs to achieve these targets, but these systems have been set aside for the time being as they were found not to fully realize the goals of the Agency.

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Although VTrans does not have in place the full management systems to evaluate and prioritize individual facilities, it has adopted performance goals/targets for bridges and pavement. These goals should be applicable to Chittenden County infrastructure and include:

- **Pavement** (highways): Performance goal is based on a condition index that rates each roadway on a scale of 1 to 100 based on rutting, cracking, and roughness (100 represents perfect condition). The VTrans goal for this performance measure is 70 on all state maintained highways.
- **Bridges**: Performance goal is based on the percent of structurally deficient bridges on each highway system statewide as follows
  - Interstate system: 7% or less structurally deficient (about 21 bridges statewide)
  - State Highway system: 16% (= 122 bridges)
  - Town Highway systems: 16% (= 257 bridges)
  - Culverts: 12% (= 155 culverts)

### **Asset Management for MTP System Preservation: General Methods**

The ideal basis to manage the transportation assets in the CCMPO region is a management system which would incorporate extensive data collection relative to facility condition and perform sophisticated analyses to optimize facility maintenance and rehabilitation. Since these systems are not currently available a more generalized system was used to estimate system preservation needs for this financial plan.

The approach taken was to estimate annualized asset maintenance requirements based on generalized life-cycle requirements for each type of facility (highways, bridges, and transit). For highways and bridges, this was done without regard to current condition and was based on the inventory of transportation facilities of each type for the county, including bridges and roadways by functional class. The Chittenden County Transportation Authority (CCTA) has developed detailed projections of transit capital and operating needs over the life of the planning horizon so the transit estimate uses the current condition of existing vehicles and facilities as its basis for calculating transit preservation funding needs. A similar approach to the calculation of system preservation needs was performed for the 2025 CCMPO MTP completed in 2005.

Establishing pavement and bridge maintenance needs through generalized system calculations has a number of disadvantages relative to the more sophisticated management systems under discussion at VTrans:

- Preservation costs do not reflect the actual condition of existing facilities.
- There are no performance targets for the different types of assets and it is not possible to track progress toward any performance goals.
- The general calculations do not address potential alternative budgeting strategies which could be used to achieve performance standards in different ways.

Although the issues identified above are significant, the system calculations described below are adequate for the purpose of identifying the general investment required to continue operating federally funded transportation infrastructure in Chittenden County at acceptable service levels.

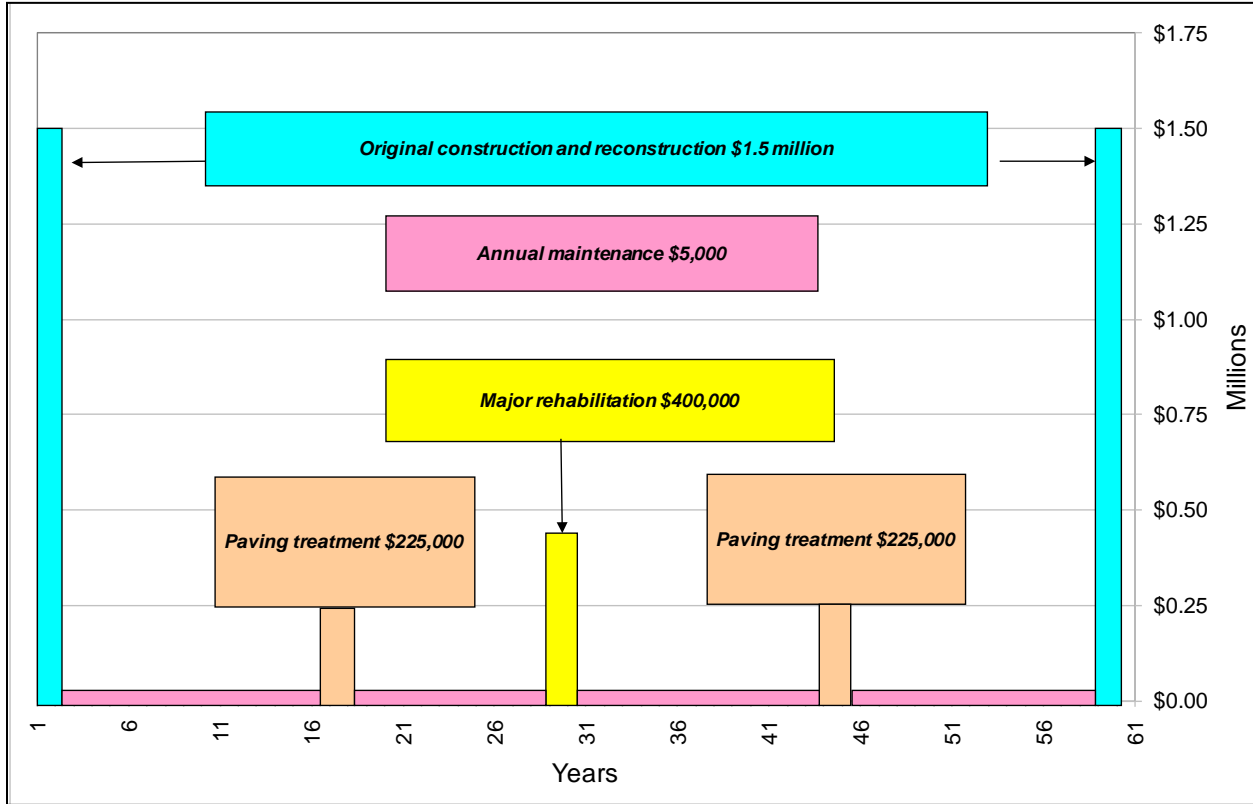
The requirements for system preservation have been evaluated initially in constant (2009) dollars for purposes of comparison. These have been inflated to current (“year of expenditure”) dollars at a later stage when combined and projected over the plan horizon.

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**Pavement Management System (PMS)**

Costs for highway pavement management have been based on the Vermont Legislature’s Joint Fiscal Office (JFO) estimate of life cycle costs statewide for all 3,200 mi of state highway.

**Figure 5: Typical Vermont highway - 60 year life cycle costs per mile**



Source: Schickner, JFO, Highwaylifecycle2004.xls

Based on this, an estimate of annual cost per lane mile across the entire system was calculated as shown in Table 5 below.

**Table 5: Annualized life cycle costs for 3,200 miles of Vermont state highways**

Work	System coverage / cost (2004 costs)	Annual Cost
1) Annual routine maintenance	\$5,000 / mile x 3,200 miles =	16,000,000
2) Paving treatments at years 18 and 45	\$225,000 / mile x 107 miles per year =	24,075,000
3) Major rehabilitation at 30 years	\$400,000 / mile x 53 miles per year =	21,200,000
4) Reconstruction after 60 years	\$1,500,000 / mile x 53 miles per year =	79,500,000
Total annual life cycle costs		140,775,000
Inflated to 2009\$ (ENR index)		169,563,000
<b>Annual cost per lane mile</b>	<b>Total / 3200 mi / 2.7 lanes (avg)</b>	<b>\$19,625</b>

- Notes: 1. Original table modified to include cost of routine maintenance in annual total  
 2. Original table modified from 5% annual inflation to ENR cost index

Source: N Schickner, JFO, Highwaylifecycle2004.xls and Oman Analytics

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This statewide unit cost per lane mile to maintain highways was next applied to Chittenden County highways. Depending on the functional classification of the highway (interstate, arterial, or collector) and the urban or rural roadway location, the unit cost will vary reflecting different levels and mixes of traffic. Therefore, the single unit cost was further broken down to reflect these conditions based on unit cost ratios developed for the 2005 MTP, which were themselves based on earlier ratios developed for CUTS (FTA, Characteristics of Urban Transportation Systems (CUTS), 1989). Table 6 below applies these unit costs to CCMPO roadways based on the total inventory of lane-miles of roadway by class as specified in the Vermont Center for Geographic Information Systems (VCGI) TransRoad\_RDS GIS database provided by VTrans. The total annual cost to maintain Chittenden County highways was estimated at \$13.3 million in 2009 dollars.

**Table 6: Annual Cost to Maintain Chittenden County Highways (2009 \$)**

FUNCL	Functional Class	Lane Miles	Unit Cost (\$/lami/yr)	Annual Cost (\$/yr)
1	Rural Interstate	49.7	22,540	1,119,162
2	Rural Principal Arterial	13.1	18,314	239,875
6	Rural Minor Arterial	48.4	18,314	885,621
7	Rural Major Collector	48.0	18,314	878,845
11	Urban Interstate	117.3	24,477	2,871,685
12	Urban Freeway	50.2	24,477	1,228,019
14	Urban Principal Arterial	132.3	24,477	3,237,863
16	Urban Minor Arterial	135.8	19,899	2,702,482
17	Urban Collector	8.5	19,899	169,338
	<b>Total</b>			<b>13,332,891</b>

Although rural major collectors and urban collectors are eligible for federal funding support, VTrans generally only funds roadways of these functional classes if they are state numbered routes (e.g. US 2, VT 116, etc) and the above analysis was based on this practice. This excludes town maintained highways on the federal aid system which are not state numbered routes. If all roadways eligible for funding for pavement maintenance activities received funds, the annual cost would increase to \$18.5 million.

### **Bridge Management (BMS)**

Bridge management costs were based on an inventory of county bridges extracted from the GIS coverage: TransStructures\_TRANSTRUC. This inventory includes long ( $\geq 20$  feet in length) bridges in Chittenden County regardless of state or town ownership. Preservation costs for these structures was simpler to evaluate than for roadways since the estimated cost to repair or replace each bridge was entered in the GIS database as a result of the inspection process.

The GIS database includes estimates to either repair or replace each bridge. The criteria for selecting between these alternative cost estimates for this analysis were:

- If the general 70 year lifespan for bridges was currently exceeded, assume replacement is required, otherwise
- apply estimated repair cost at 50 year life.

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Bridge maintenance activities were annualized over the full 50 year normal life cycle of a replacement bridge. Based on this analysis, the annualized cost in 2009 dollars to maintain 187 long bridges in Chittenden County was \$6.7 million per year.

### **Public Transportation (PTMS)**

Public transportation has unique characteristics which complicate comparisons to pavement and bridge infrastructure. The coverage of transit system routes, the role of operating costs, and historical funding patterns are three specific issues related to public transportation and reviewed below.

### **System Coverage**

Asset management systems are based on achieving acceptable standards of performance. For the pavement management system, these standards are based on a number of serviceability factors such as roughness, rutting, and structural integrity. These are the factors perceived as characterizing the serviceability of the highway system. However, there is a built in assumption that the highway system actually serves all of the region's uses that it should. Numerous local regulations including subdivision bylaws and zoning effectively require that no uses are developed that are not served by existing or new roads. While the availability of highways for transportation is so pervasive as to be a fundamental assumption for roadways, public transportation is more challenged in this regard.

Transit does not currently serve the CCMPO region with nearly the completeness of coverage of the roadway system. Although the state supports only the most significant portion of the total highway system, these higher functional class highways on the federal aid system would not function without the vast network of local access roadways constructed and maintained by municipalities and private citizens. This universality of highway coverage is effectively assumed even before the maintenance costs of the highway system are considered. Proper paving and bridge maintenance projects act to bring these components of the total system up to an accepted standard of service. Deficiencies in transit coverage effectively reduce public transportation's performance with respect to any service standard that includes universal availability of this service.

### **Historic funding**

Historic funding patterns have placed transit at a disadvantage. While in recent years there has been some reawakening to the importance of a more balanced approach to transport, for many years transit was neglected in favor of the more "modern" interstate highway system and its adjuncts. This has led to a serious lag in the available level of services in the transit sector. Thus, even a balanced approach to system preservation needs effectively freezes this discrepancy in place.

### **Operating funding**

Transit is unique with respect to its operating funding for at least two reasons:

- While almost all transit operations must be supported by the transit provider, highway modes shift those costs onto private motorists who must bear the entire burden of purchasing, operating, and maintaining the fleet of transportation vehicles.
- While the vast majority of transit operations costs are effectively internal to the provider, most highway oriented operating costs are either separated from the capital costs, or outside this process altogether. For example, VTrans maintains a separate division that

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handles the plowing, mowing, and other maintenance activities, and both the state and localities handle support such as street lighting, signal maintenance and operations, etc separately from roadway capital improvements. Many activities providing support to highway based transport such as police/enforcement, fire/rescue, courts, and corrections are all budgeted and supported separately from the basic highway system. The state based, federally supported highway network that is subject to this MTP is also heavily dependent on the extensive network of roadways supported by the cities and towns of the state to provide the crucial access from individual residences and businesses. These additional system costs are not recognized in existing highway budgeting processes in Vermont.

Unlike private auto/highway based systems, operating funding is as essential to transit service as are the capital facilities. Ultimately, the issue of operating funding must be addressed before additional investments to bring transit more on par with highways can be achieved.

Two scenarios were considered for transit system preservation needs:

1. The level of investment required to simply maintain the current system (routes, service frequencies, etc), over the next 25 years, and
2. In recognition of the need to make some level of improvements to the existing system to achieve a basic standard of service, the additional investment required to bring the system up to a standard of service as outlined in the CCTA Transit Development Plan (TDP). This, of course, leaves open the question of whether even the system envisioned by the TDP will fully satisfy an appropriate service standard for the county in the future.

Annual operating costs (less fares) for the existing system are expected to be about \$6.5 million and for an expanded system offering meaningful service to the region's discretionary riders, the operating costs are about \$16.6 million (including costs for existing services). Capital expenses for these two scenarios as developed by CCTA are included in Table 7<sup>7</sup>.

**Table 7: Transit Capital Expense Projections to 2035 (Millions of 2009 constant \$)**

Capital Expense	Current System	TDP System
Buses	42.4	114.1
Paratransit and Elderly & Disabled Vehicles	10.8	12.5
Facilities	34.0	51.2
Total Capital Expenses	87.1	177.8
Annual Expense per year over 25 year period	3.5	7.1

Note: TDP system includes Current System expenses

## System Preservation Summary

The total annual expenditures required for system preservation consists of the sum of those expenditures required for the pavement, bridge, and public transportation management. The

<sup>7</sup> CCTA costs were developed in 2010 dollars. However, since inflation was assumed to be 0 for the 2009 - 2010 period, costs are the same for 2009.

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transit system calculations include two possible approaches to setting acceptable functionality: maintaining only the existing system and level of service, or bringing this system up to the standard recognized in the Transit Development Plan (TDP). The total annualized costs for system preservation are shown in Table 8 below.

**Table 8: Annualized Budget for All CCMPO System Preservation (millions of 2009 constant \$)**

System	Existing System	TDP Transit
Pavement Management	13.3	13.3
Bridge Management	6.7	6.7
Public Transportation Management	3.5	7.1
Sub Total	23.5	27.1
Contingency (10%)	2.4	2.7
<b>TOTAL</b>	<b>25.9</b>	<b>29.9</b>

Depending on the stance taken by the plan with respect to “maintaining” a fully functional transit service standard, **base level “maintenance” expenditures, for roads, bridges and public transportation, should be between roughly \$26 million and \$30 million (2009\$) annually to maintain the existing system** (Refer to totals in Table 8). **For the remainder of this analysis the higher level of transit maintenance need is assumed to support the recommendations of CCTA’s Transit Development Plan.**

The system preservation expenditure is expressed in year of expenditure (YoE) dollars in Table 9 below. This table presents these expenditures both annually and cumulatively in five year increments.

**Table 9: Annual and Cumulative System Preservation Needs (millions of YoE \$)**

FY	2010	2015	2020	2025	2030	2035
Annual	29.9	35.0	40.7	47.5	55.5	64.8
Cumulative	29.9	193.8	385.3	609.0	870.0	1,175.0

Notes: Inflation based on 3.15% annual and TDP transit is assumed

The final calculation in Part 2 of the financial plan is determining funds available for new projects, after accounting for system preservation. This subtracts the preservation costs (as detailed in Table 9) from the total funds available to Chittenden County in Table 3 (on page 6). The result is shown in 5 year increments in Table 10 in millions of constant 2009 dollars and year of expenditure dollars. The Transit Development Plan public transportation system amounts were used for the system preservation budget.

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**Table 10: Annual and Cumulative Funding Available for Planned Improvements (\$ Millions)**

	FY	2010	2015	2020	2025	2030	2035
<b>Annual</b>	Constant 2009 \$	16.8	22.8	28.8	34.9	40.9	46.9
	Year of Expenditure \$	16.8	26.7	39.3	55.5	76.0	101.8
<b>Cumulative</b>	Constant 2009 \$	16.8	119.0	251.2	413.5	605.8	828.2
	Year of Expenditure \$	16.8	129.5	299.5	543.2	880.3	1,335.3

Notes: Total funding available based on Table 3. Inflation based on 3.15% annual and the TDP transit system scenario is assumed for the calculation of system preservation requirements.

## Conclusion

This financial plan concludes Chittenden County will have approximately \$17 million in FY2010 for additional transportation investment. This is calculated by the total of expected funds available, minus maintenance needs. This level of funding is expected to grow at a linear rate of \$1.2 million annually into the future. By the year 2035 CCMPO expects to have approximately \$828 million (2009 dollars) in cumulative funding available for new projects. When factoring inflation into the calculation of the cumulative funding available, the total amount of funds increases to \$1,335 million in year of expenditure dollars.

As mentioned in the discussion of potential decreases in funding on page 8, CCMPO's funding obligation history includes congressional earmarks which we assume will continue at current trends throughout the 25 year history of the MTP. Due to the uncertainty of this assumption we investigated two potential "what if" scenarios where earmark levels were halved and eliminated altogether which are shown in Figure 6 below.

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**Figure 6: CCMPO Earmark Scenarios - Funding Availability for New Projects**

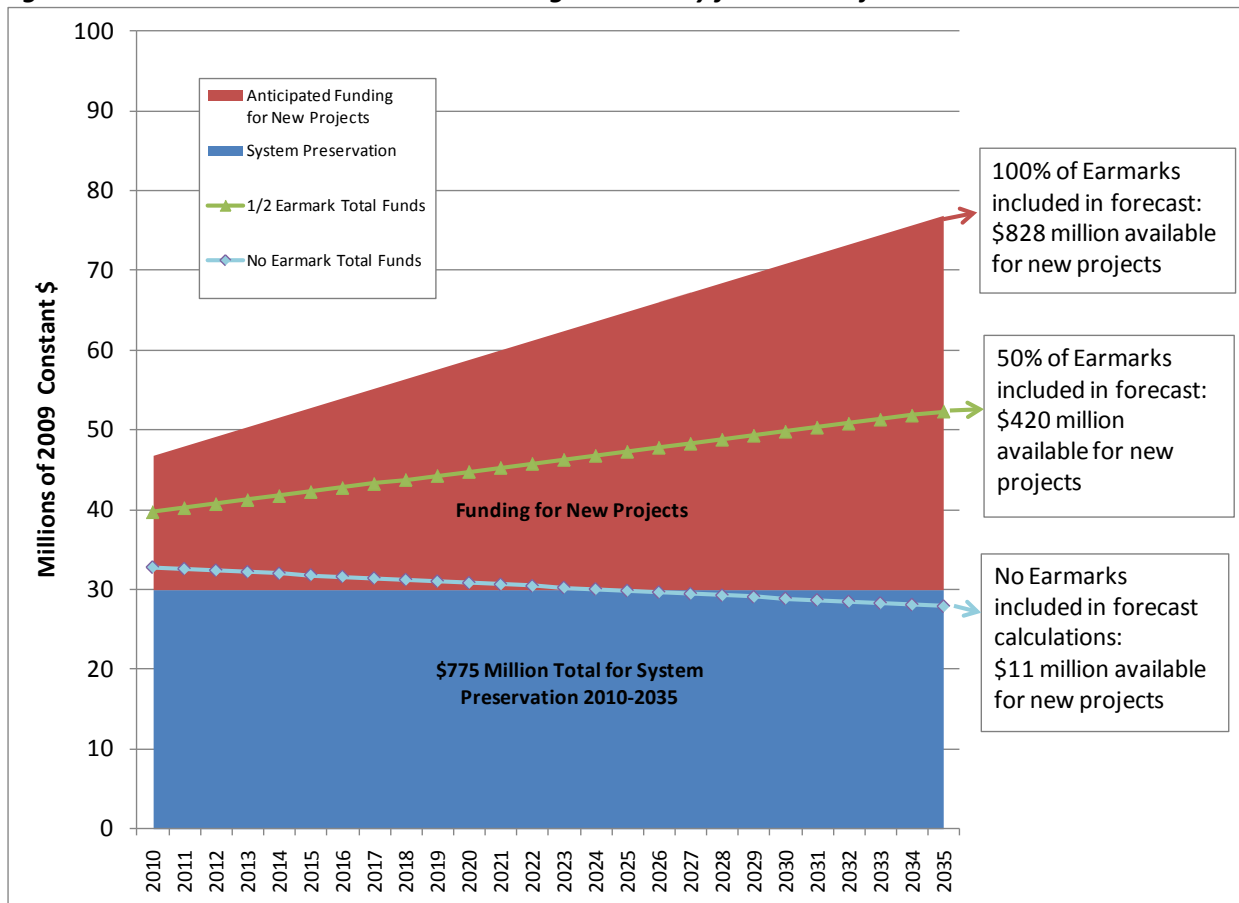


Figure 6 shows that without the benefit of our historic trend of earmark enhanced funding (see light blue downwardly sloping line above), we would reach a point of not having enough funding to maintain our existing system in 2025. Reducing earmark availability by half suggests available funding for new projects between 2010-2035 would be about \$400 million less than the normal scenario including earmarks. While the blue shaded area at the bottom of the chart evenly apportions the maintenance funding over the 25 year planning horizon for illustrative purposes, maintenance expenditures will vary from year to year over the 25 year period.

The 2035 MTP financial forecast is based on recent trends continuing, a method recommended in FHWA guidance. However, the unpredictability of future transportation funding suggests that being aware of other funding scenarios is good preparation should unanticipated events occur which may affect CCMPO funding resources. Keeping this in mind, the CCMPO 2035 MTP will use the values in Table 10 to estimate future funds available for projects in Chittenden County.

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## **Appendix Material: 23 CFR 450.322(f)(10)**

(10) A financial plan that demonstrates how the adopted transportation plan can be implemented.

(i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

(ii) For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under Sec. 450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.

(iii) The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified.

(iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Starting December 11, 2007, revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect “year of expenditure dollars,” based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

(v) For the outer years of the metropolitan transportation plan (i.e., beyond the first 10 years), the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/cost bands.

(vi) For nonattainment and maintenance areas, the financial plan shall address the specific financial strategies required to ensure the implementation of TCMs in the applicable SIP.

(vii) For illustrative purposes, the financial plan may (but is not required to) include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.

(viii) In cases that the FHWA and the FTA find a metropolitan transportation plan to be fiscally constrained and a revenue source is subsequently removed or substantially reduced (i.e., by legislative or administrative actions), the FHWA and the FTA will not withdraw the original determination of fiscal constraint; however, in such cases, the FHWA and the FTA will not act on an updated or amended metropolitan transportation plan that does not reflect the changed revenue situation.