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MEMORANDUM

TO: Metropolitan Transportation Plan Steering Committee

FM: Dean Pierce

SB: Draft Performance Measures

DT: November 22, 2000

Following is material relating to the draft performance measures. We will be discussing these at the next meeting.

The first item is a conceptual graphic depicting the relationship between the performance measures and the Vision and Goals.

The second is a table presenting the actual draft vision, draft goals, and draft performance measures.

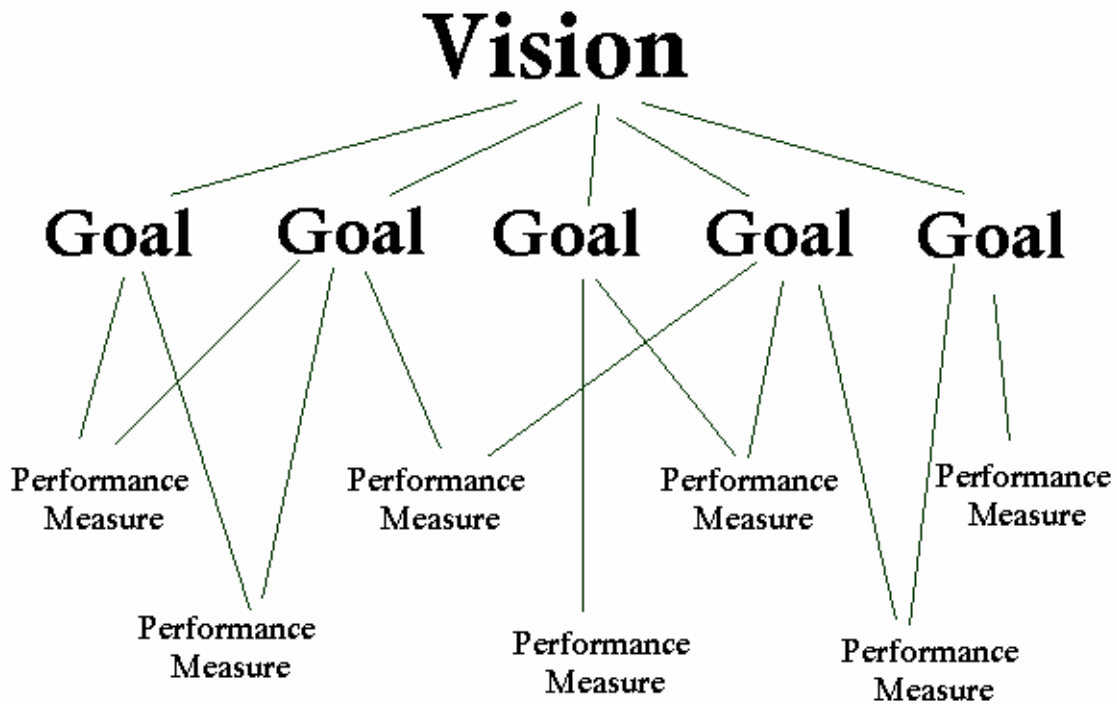
The third is a simple list of the draft performance measures.

The fourth is a more extensive document defining the performance measures and describing how they might be applied.

After you have had a chance to review the material, please let me know if you have any urgent comments.

Thanks.

As illustrated below, Performance Measures are statements that should flow from and support the Plan's Goals. By paying attention to the topics addressed by the Performance Measures, we can increase the likelihood that the Plan will remain consistent to the overall Vision.



This table presents the actual language from the draft vision, goals, and measures.

Vision	Goals	Measure
<p>Our transportation system enhances and connects healthy, vibrant communities. It is safe, efficient, multi-modal, and accessible to all. It supports economic vitality, and is designed and operated to complement and respect our cherished natural resources and cultural heritage</p>	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p>	Bridge Sufficiency Rating
	<p>2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers.</p>	Pavement Condition Rating
	<p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p>	Sidewalk Condition
	<p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p>	Bike Path Condition
	<p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p>	Public Transit Vehicle Condition
	<p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p>	Delay per vehicle trip
	<p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p>	Average transit trip travel time / average auto trip travel time
	<p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p>	Congested VMT
	<p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p>	Transportation investment relative to Growth Centers
	<p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>	Land Consumption
	<p>11. Educate the public-from children to seniors-about the implications of different development patterns and mode choice decisions.</p>	Percent increase in Traffic Volume on Local Streets
	<p>12. Provide improvements to transportation facilities and services expeditiously through an inclusive and cost effective process.</p>	Vehicle Crashes/person trip
		Bicycle and Pedestrian Crashes/person trip
		% of Person Trips Possible by Fixed Route Transit
		% of Person Trips Possible by Walking or Biking
		% of Trips Possible by more than one mode
		Average cost per person trip
		System-wide operation and maintenance costs
		Average Person trip out of pocket transportation costs
		Bus service in low income/disadvantaged neighborhoods
		Travel options available to low income populations
		Air Pollution Emission
		Number of people living near routes with high truck volumes
		Commercial Air Trips
		Commercial Air Flights
		Transportation System Cost per Ton Mile of Freight
		Average Arterial/Freeway Level of Service

**CCMPO MTP Update
Draft Performance Measures
November 22, 2000**

Measures

- ? Bridge Sufficiency Rating
- ? Pavement Condition Rating
- ? Sidewalk Condition
- ? Bike Path Condition
- ? Public Transit Vehicle Condition
- ? Delay per vehicle trip
- ? Average transit trip travel time / average auto trip travel time
- ? Congested VMT
- ? Transportation investment relative to Growth Centers
- ? Land Consumption
- ? Percent increase in Traffic Volume on Local Streets
- ? Vehicle Crashes/person trip
- ? Bicycle and Pedestrian Crashes/person trip
- ? % of Person Trips Possible by Fixed Route Transit
- ? % of Person Trips Possible by Walking or Biking
- ? % of Trips Possible by more than one mode
- ? Average cost per person trip
- ? System-wide operation and maintenance costs
- ? Average Person trip out of pocket transportation costs
- ? Bus service in low income/disadvantaged neighborhoods
- ? Travel options available to low income populations
- ? Air Pollution Emission
- ? Number of people living near routes with high truck volumes
- ? Commercial Air Trips
- ? Commercial Air Flights
- ? Transportation System Cost per Ton Mile of Freight
- ? Average Arterial/Freeway Level of Service
- ? Inter - Modal Transfers
- ? Vehicle hours traveled per person trip
- ? Vehicle miles traveled per person trip
- ? Vehicle occupancy
- ? BTU per person trip
- ? Peak Hour Mode Split
- ? Bus passenger hours / bus hours

Bridge Sufficiency Rating

Definition/Source	Bridge sufficiency ratings obtained from VTrans Structures Division (bridge sufficiency rating database).
Discussion	Bridge sufficiency ratings (based on bi-annual inspections) quantify the functional and physical status of bridges; results range from 0 to 100
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in bridges <i>Monitoring:</i> Track VTrans data
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Pavement Condition Rating

Definition/Source	Pavement ratings obtained from VTrans Pavement Management Division (pavement management database).
Discussion	The VTrans pavement monitoring system (based on dROADS) quantifies the condition of pavements on state highways, class one local highways, and interstates. Results range from 0 to 100. Using the results, segments are rated good, fair, acceptable, or poor.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in paving <i>Monitoring:</i> Track VTrans data
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Sidewalk Condition

Definition/Source	Qualitative assessment of condition based surface defects, vertical displacements, and condition of markings
Discussion	This ad hoc measure could be based on a simple 0 (bad) -5 (good) scale, with assessments based on interviews with public works directors, etc. Individual facilities or portions of facilities would be assigned to one of the categories.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in sidewalks <i>Monitoring:</i> Track subjective evaluation
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Bike Path Condition

Definition/Source	Qualitative assessment of condition based surface defects, vertical displacements, and condition of markings
Discussion	This ad hoc measure could be based on a simple 0 (bad) -5 (good) scale, with assessments based on interviews with public works directors, etc. Individual facilities or portions of facilities would be assigned to one of the categories.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in paving <i>Monitoring:</i> Track subjective evaluation
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

	<p>elderly, the disabled, and youth.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>
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Public Transit Vehicle Condition

Definition/Source	Fleet-wide average of odometer readings as reported by CCTA and SSTA
Discussion	This measure serves as a surrogate for the overall condition of the public transit fleet and assumes that, even with routine maintenance, condition degrades with use and time.
Methodology	<p><i>Projection:</i> Subjective assessment based on recent trends and capital investment plans.</p> <p><i>Monitoring:</i> Track CCTA data</p>
Goal(s) potentially addressed	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p> <p>2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers.</p> <p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>

Delay per vehicle trip

Definition/Source	The average amount of additional time spent traveling due to less than optimal conditions (congestion), as calculated by the CCMPO travel demand model.
Discussion	Delay can be estimated over facilities, corridors, or entire systems. As a measure, delay focuses on changes in vehicular mobility.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Average transit trip travel time / average auto trip travel time

Definition/Source	The ratio of the average length of transit trips to the average length of automobile trips, as calculated by the CCMPO travel demand model.
Discussion	Travel time is the measure most reflective of customer priorities. To an extent, the ratio embodied in the measure will reflect the types of trips taken using the different modes. However, when the ratio of trip types is taken into account, changes in the travel time can indicate relative efficiencies.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds

	<p>community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>
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Congested VMT

Definition/Source	The total number of vehicle miles traveled in congested conditions, as calculated by the CCMPO travel demand model.
Discussion	Like delay, congestion reflects time spent traveling beyond what would be experienced under optimal conditions.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p> <p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p>

Transportation investment relative to Growth Centers

Definition/Source	Ratio of federal, state, and local dollars spent on engineering and construction activities for transportation projects within growth centers (as determined by CCRPC or CCMPO) to federal, state, and local dollars spent on engineering and construction activities for transportation projects outside growth centers
Discussion	Transportation investment patterns both follow and lead land use patterns. This measure sheds light on the potential impacts various transportation alternatives will have on sprawl.

Methodology	<i>Projection:</i> Subjective assessment <i>Monitoring:</i> Track data over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Land Consumption

Definition/Source	The number of acres of land undergoing change in land use, on an annual basis, as a direct result of the construction of transportation projects; data calculated using project plans and geographic information systems
Discussion	This measure gives a gross indication of potential resource impacts and also sheds light on the potential impacts various transportation alternatives will have on sprawl
Methodology	<i>Projection:</i> Subjective assessment reflecting transportation alternatives <i>Monitoring:</i> Track data over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Percent increase in Traffic Volume on Local Streets

Definition/Source	Annual percentage increase in vehicle miles traveled on local streets (determined by CCMPO), as calculated by the CCMPO travel demand model.
Discussion	This measure gives a gross indication of quality of life impacts
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.

Vehicle Crashes/person trip

Definition/Source	Ratio of the number of vehicle accidents region-wide (based on state police barracks database) to the number of person trips region-wide (based on CCMPO travel demand model),
Discussion	Accident data measure how well the transportation system performs in terms of human safety. Changes in accident rates have a significant economic as well as human/social impact.
Methodology	<i>Projection:</i> Subjective assessment reflecting investment trends and evaluation of the characteristics of transportation alternatives <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.

Bicycle and Pedestrian Crashes/person trip

Definition/Source	Ratio of the number of bicycle and pedestrian accidents region-wide to the number of person trips region-wide (based on CCMPO travel demand model).
Discussion	This measure focuses specifically on changes to the safety of the non motorized segment of the transportation system
Methodology	<i>Projection:</i> Subjective assessment reflecting investment trends and evaluation of the characteristics of transportation alternatives <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving

	safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.
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% of Person Trips Possible by Fixed Route Transit

Definition/Source	Percentage of person trips beginning and ending in Traffic Analysis Zones (TAZs) served by transit (CCTA, CATS, Charlotte to Burlington Commuter Rail), as calculated by the CCMPO travel demand model (Capital District MPO approach).
Discussion	This measure is a surrogate for the ease and convenience provided by the transportation system to reach desired locations via transit.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.

% of Person Trips Possible by Walking or Biking

Definition/Source	Percentage of person trips less than two miles in length.
Discussion	This measure is a surrogate for the ease and convenience provided by the transportation system to reach desired locations via non motorized transportation.
Methodology	<i>Projection:</i> CCMPO travel demand model.

	<i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.

% of Trips Possible by more than one mode

Definition/Source	Percentage of person trips beginning and ending in Traffic Analysis Zones (TAZs) served by one of more of the following: transit (CCTA, CATS, Charlotte to Burlington Commuter Rail), bicycle and pedestrian routes, ferries, intercity rail, intercity bus.
Discussion	This measure is broad indicator of the access provided by the transportation system. The more opportunities—via different modes—available to conveniently reach social and economic activities, the greater the access.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

	<p>elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.</p>
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Average cost per person trip

Definition/Source	The total annual cost of transportation (operating, maintenance, engineering, construction, and out of pocket costs as determined by planning model) divided by the total number of surface based person trips (calculated by the CCMPO travel demand model).
Discussion	Cost measures can have three components: system costs, out of pocket costs, and social/externalized costs. This measure focuses on the first two elements but may also include the third if consensus can be reached.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment trends <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.

System-wide operation and maintenance costs

Definition/Source	The total annual operating, maintenance, engineering, and construction costs of the transportation system (as determined by planning model)
Discussion	This measure focuses on the first of the three possible cost elements.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment trends <i>Monitoring:</i> Track results over time.
Goal(s) potentially	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy

addressed	of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.
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Average Person trip out of pocket transportation costs

Definition/Source	The total annual out of pocket cost of transportation (as determined by planning model) divided by the total number of person trips (calculated by the CCMPO travel demand model).
Discussion	This measure focuses on the second of the three possible cost elements.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment—public as well as private—trends. <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Bus service in low income/disadvantaged neighborhoods

Definition/Source	Total number of miles traveled annually by transit vehicles (CCTA, CATS) in or through Traffic Analysis Zones (TAZs) with household income less than 80 percent of the Chittenden County median
Discussion	This measure is a surrogate for the access provided to low income persons to reach desired locations via transit
Methodology	<i>Projection:</i> Estimate based on investment trends and results of CCMPO traffic model <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Travel options available to low income populations

Definition/Source	Total number of miles traveled annually by transit vehicles and other modes of transportation in or through Traffic Analysis Zones (TAZs) with household income less than 80 percent of the Chittenden County median
Discussion	This measure is a surrogate for the access provided to low income persons to reach desired locations via a range of modes.
Methodology	<i>Projection:</i> Estimate based on investment trends and results of CCMPO traffic model <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Air Pollution Emission

Definition/Source	Amounts of Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx), and Particulate matter (PM10) generated by the transportation system.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> Projected using air pollution planning models. <i>Monitoring:</i> Ongoing use of model and monitoring
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Number of people living near routes with high truck volumes

Definition/Source	Total population residing in Transit Analysis Zones located (all or in part) within one half mile of highways with truck volumes greater than 8 percent of the total AADT, as calculated by the CCMPO travel demand model.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Commercial Air Trips

Definition/Source	Number of one way commercial airline passenger trips annually to/from the Burlington International Airport.
Discussion	This is a measure of demand for commercial air service in the region.
Methodology	<i>Projection:</i> Estimate based on trends <i>Monitoring:</i> Track data from sampling of airlines providing service and/or from FAA
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Commercial Air Flights

Definition/Source	Number of one way commercial airline flights annually to/from the Burlington International Airport.
Discussion	This is a measure of supply of commercial air service in the region
Methodology	<i>Projection:</i> Estimate based on airline trends /planning models <i>Monitoring:</i> Track data from Burlington International Airport
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Transportation System Cost per Ton Mile of Freight

Definition/Source	The total annual operating, maintenance, engineering, and construction costs of the transportation system (as determined by planning model) divided by the total annual Ton Miles of Freight moved in the region (as determined by methodology used in Cambridge Systematics freight study)
Discussion	As noted above, cost measures can include system costs, out of pocket costs, and social/externalized costs. This measure, which is an indicator of the system's efficiency and cost effectiveness for moving freight, focuses on the first two elements (the third may be included if consensus can be reached).
Methodology	<i>Projection:</i> Projected/estimated using planning models and freight movement trends. <i>Monitoring:</i> Ongoing use of models and monitoring
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Average Arterial/Freeway Level of Service

Definition/Source	The average segment-based peak hour level of service (LOS) on arterials and freeways, as calculated by the CCMPO travel demand model.
Discussion	Level of service is a qualitative measure of a road's operating condition; generally described using a scale of A (little congestion) to E/F (severe congestion). When applied to freeway segments, LOS measures traffic density. When applied to arterials, LOS measures average travel speed.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Inter - Modal Transfers

Definition/Source	Relative number of inter modal transfers, on an annual basis
Discussion	This qualitative measure provides an indication of the degree to which modes of transportation are integrated and allow trip chaining using various modes to allow travelers to reach their final destinations.
Methodology	<i>Projection:</i> Subjective assessment <i>Monitoring:</i> Track data from CCTA (bike-transit boardings), VTA, other sources
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.

	10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.
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Vehicle hours traveled per person trip

Definition/Source	Ratio of the total number of vehicle hours traveled per day to the total number of person trips per day, as calculated by the CCMPO travel demand model.
Discussion	This measure is an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to time traveled
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Vehicle miles traveled per person trip

Definition/Source	Ratio of the total number of vehicle miles traveled per day to the total number of person trips per day, as calculated by the CCMPO travel demand model.
Discussion	This measure is also an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to distances traveled (and implicit consideration to land use patterns)
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Vehicle occupancy

Definition/Source	Countywide average number of persons per vehicle per vehicle trip.
Discussion	Vehicle occupancy reflects deliberate (planned) as well as spontaneous (unplanned) instances of ride sharing. Vehicle occupancy levels during peak hours can provide clues about potential utility of improvements such as high occupancy vehicle (HOV) lanes.
Methodology	<i>Projection:</i> Estimated using planning models <i>Monitoring:</i> Track modeling/sampling/census results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

BTU per person trip

Definition/Source	Average number of British Thermal Units (BTUs) consumed per person trip, as determined by planning models.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> Energy demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Peak Hour Mode Split

Definition/Source	Percent of total number of person trips occurring the peak hour taken by each of the following modes: personal vehicle, transit, bicycling and walking, as determined by the CCMPO travel demand model.
Discussion	This measure provides a direct measurement of the transportation system's relative reliance on any given mode. It helps gauge progress of efforts to reduce reliance on any given mode.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Bus passenger hours / bus hours

Definition/Source	Ratio of the total number of hours traveled by bus passenger to the total number of hours of transit bus operation, as determined by the CCMPO travel demand model.
Discussion	This measure is an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to travel undertaken using the transit mode.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

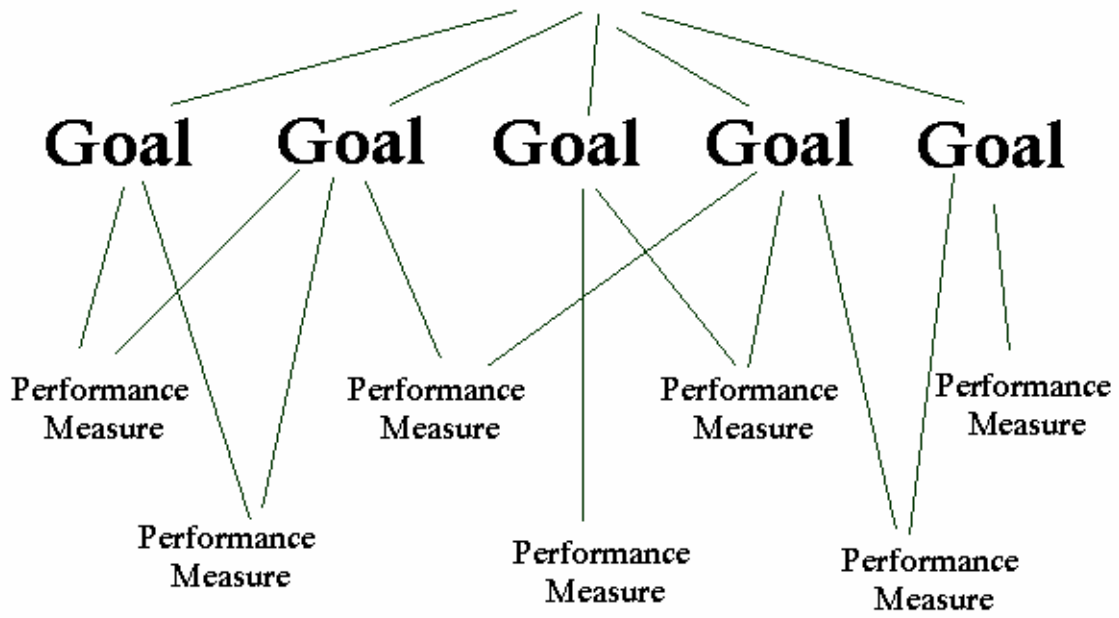
	<p>elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>
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Draft
November 22, 2000

As illustrated below, Performance Measures are statements that should flow from and support the Plan's Goals. By paying attention to the topics addressed by the Performance Measures, we can increase the likelihood that the Plan will remain consistent to the overall Vision.

Vision



This table presents the actual language from the draft vision, goals, and measures.

Vision	Goals	Measure
<p>Our transportation system enhances and connects healthy, vibrant communities. It is safe, efficient, multi-modal, and accessible to all. It supports economic vitality, and is designed and operated to complement and respect our cherished natural resources and cultural heritage</p>	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p>	Bridge Sufficiency Rating
	<p>2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers.</p>	Pavement Condition Rating
	<p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p>	Sidewalk Condition
	<p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p>	Bike Path Condition
	<p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p>	Public Transit Vehicle Condition
	<p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p>	Delay per vehicle trip
	<p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p>	Average transit trip travel time / average auto trip travel time
	<p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p>	Congested VMT
	<p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p>	Transportation investment relative to Growth Centers
	<p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>	Land Consumption
	<p>11. Educate the public-from children to seniors-about the implications of different development patterns and mode choice decisions.</p>	Percent increase in Traffic Volume on Local Streets
	<p>12. Provide improvements to transportation facilities and services expeditiously through an inclusive and cost effective process.</p>	Vehicle Crashes/person trip
		Bicycle and Pedestrian Crashes/person trip
		% of Person Trips Possible by Fixed Route Transit
		% of Person Trips Possible by Walking or Biking
		% of Trips Possible by more than one mode
		Average cost per person trip
		System-wide operation and maintenance costs
		Average Person trip out of pocket transportation costs
		Bus service in low income/disadvantaged neighborhoods
		Travel options available to low income populations
		Air Pollution Emission
		Number of people living near routes with high truck volumes
		Commercial Air Trips
		Commercial Air Flights
		Transportation System Cost per Ton Mile of Freight
		Average Arterial/Freeway Level of Service

**CCMPO MTP Update
Draft Performance Measures
November 22, 2000**

Measures

- ? Bridge Sufficiency Rating
- ? Pavement Condition Rating
- ? Sidewalk Condition
- ? Bike Path Condition
- ? Public Transit Vehicle Condition
- ? Delay per vehicle trip
- ? Average transit trip travel time / average auto trip travel time
- ? Congested VMT
- ? Transportation investment relative to Growth Centers
- ? Land Consumption
- ? Percent increase in Traffic Volume on Local Streets
- ? Vehicle Crashes/person trip
- ? Bicycle and Pedestrian Crashes/person trip
- ? % of Person Trips Possible by Fixed Route Transit
- ? % of Person Trips Possible by Walking or Biking
- ? % of Trips Possible by more than one mode
- ? Average cost per person trip
- ? System-wide operation and maintenance costs
- ? Average Person trip out of pocket transportation costs
- ? Bus service in low income/disadvantaged neighborhoods
- ? Travel options available to low income populations
- ? Air Pollution Emission
- ? Number of people living near routes with high truck volumes
- ? Commercial Air Trips
- ? Commercial Air Flights
- ? Transportation System Cost per Ton Mile of Freight
- ? Average Arterial/Freeway Level of Service
- ? Inter - Modal Transfers
- ? Vehicle hours traveled per person trip
- ? Vehicle miles traveled per person trip
- ? Vehicle occupancy
- ? BTU per person trip
- ? Peak Hour Mode Split
- ? Bus passenger hours / bus hours

Bridge Sufficiency Rating

Definition/Source	Bridge sufficiency ratings obtained from VTrans Structures Division (bridge sufficiency rating database).
Discussion	Bridge sufficiency ratings (based on bi-annual inspections) quantify the functional and physical status of bridges; results range from 0 to 100
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in bridges <i>Monitoring:</i> Track VTrans data
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Pavement Condition Rating

Definition/Source	Pavement ratings obtained from VTrans Pavement Management Division (pavement management database).
Discussion	The VTrans pavement monitoring system (based on dROADS) quantifies the condition of pavements on state highways, class one local highways, and interstates. Results range from 0 to 100. Using the results, segments are rated good, fair, acceptable, or poor.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in paving <i>Monitoring:</i> Track VTrans data
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Sidewalk Condition

Definition/Source	Qualitative assessment of condition based surface defects, vertical displacements, and condition of markings
Discussion	This ad hoc measure could be based on a simple 0 (bad) -5 (good) scale, with assessments based on interviews with public works directors, etc. Individual facilities or portions of facilities would be assigned to one of the categories.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in sidewalks <i>Monitoring:</i> Track subjective evaluation
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Bike Path Condition

Definition/Source	Qualitative assessment of condition based surface defects, vertical displacements, and condition of markings
Discussion	This ad hoc measure could be based on a simple 0 (bad) -5 (good) scale, with assessments based on interviews with public works directors, etc. Individual facilities or portions of facilities would be assigned to one of the categories.
Methodology	<i>Projection:</i> Subjective assessment based on relative level of investment in paving <i>Monitoring:</i> Track subjective evaluation
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

	<p>elderly, the disabled, and youth.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>
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Public Transit Vehicle Condition

Definition/Source	Fleet-wide average of odometer readings as reported by CCTA and SSTA
Discussion	This measure serves as a surrogate for the overall condition of the public transit fleet and assumes that, even with routine maintenance, condition degrades with use and time.
Methodology	<p><i>Projection:</i> Subjective assessment based on recent trends and capital investment plans.</p> <p><i>Monitoring:</i> Track CCTA data</p>
Goal(s) potentially addressed	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p> <p>2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers.</p> <p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>

Delay per vehicle trip

Definition/Source	The average amount of additional time spent traveling due to less than optimal conditions (congestion), as calculated by the CCMPO travel demand model.
Discussion	Delay can be estimated over facilities, corridors, or entire systems. As a measure, delay focuses on changes in vehicular mobility.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Average transit trip travel time / average auto trip travel time

Definition/Source	The ratio of the average length of transit trips to the average length of automobile trips, as calculated by the CCMPO travel demand model.
Discussion	Travel time is the measure most reflective of customer priorities. To an extent, the ratio embodied in the measure will reflect the types of trips taken using the different modes. However, when the ratio of trip types is taken into account, changes in the travel time can indicate relative efficiencies.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds

	<p>community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.</p>
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Congested VMT

Definition/Source	The total number of vehicle miles traveled in congested conditions, as calculated by the CCMPO travel demand model.
Discussion	Like delay, congestion reflects time spent traveling beyond what would be experienced under optimal conditions.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<p>1. Preserve and improve the physical condition and operational performance of the existing transportation system.</p> <p>3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p>

Transportation investment relative to Growth Centers

Definition/Source	Ratio of federal, state, and local dollars spent on engineering and construction activities for transportation projects within growth centers (as determined by CCRPC or CCMPO) to federal, state, and local dollars spent on engineering and construction activities for transportation projects outside growth centers
Discussion	Transportation investment patterns both follow and lead land use patterns. This measure sheds light on the potential impacts various transportation alternatives will have on sprawl.

Methodology	<i>Projection:</i> Subjective assessment <i>Monitoring:</i> Track data over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Land Consumption

Definition/Source	The number of acres of land undergoing change in land use, on an annual basis, as a direct result of the construction of transportation projects; data calculated using project plans and geographic information systems
Discussion	This measure gives a gross indication of potential resource impacts and also sheds light on the potential impacts various transportation alternatives will have on sprawl
Methodology	<i>Projection:</i> Subjective assessment reflecting transportation alternatives <i>Monitoring:</i> Track data over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Percent increase in Traffic Volume on Local Streets

Definition/Source	Annual percentage increase in vehicle miles traveled on local streets (determined by CCMPO), as calculated by the CCMPO travel demand model.
Discussion	This measure gives a gross indication of quality of life impacts
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.

Vehicle Crashes/person trip

Definition/Source	Ratio of the number of vehicle accidents region-wide (based on state police barracks database) to the number of person trips region-wide (based on CCMPO travel demand model),
Discussion	Accident data measure how well the transportation system performs in terms of human safety. Changes in accident rates have a significant economic as well as human/social impact.
Methodology	<i>Projection:</i> Subjective assessment reflecting investment trends and evaluation of the characteristics of transportation alternatives <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.

Bicycle and Pedestrian Crashes/person trip

Definition/Source	Ratio of the number of bicycle and pedestrian accidents region-wide to the number of person trips region-wide (based on CCMPO travel demand model).
Discussion	This measure focuses specifically on changes to the safety of the non motorized segment of the transportation system
Methodology	<i>Projection:</i> Subjective assessment reflecting investment trends and evaluation of the characteristics of transportation alternatives <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving

	safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth.
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% of Person Trips Possible by Fixed Route Transit

Definition/Source	Percentage of person trips beginning and ending in Traffic Analysis Zones (TAZs) served by transit (CCTA, CATS, Charlotte to Burlington Commuter Rail), as calculated by the CCMPO travel demand model (Capital District MPO approach).
Discussion	This measure is a surrogate for the ease and convenience provided by the transportation system to reach desired locations via transit.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.

% of Person Trips Possible by Walking or Biking

Definition/Source	Percentage of person trips less than two miles in length.
Discussion	This measure is a surrogate for the ease and convenience provided by the transportation system to reach desired locations via non motorized transportation.
Methodology	<i>Projection:</i> CCMPO travel demand model.

	<i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.

% of Trips Possible by more than one mode

Definition/Source	Percentage of person trips beginning and ending in Traffic Analysis Zones (TAZs) served by one of more of the following: transit (CCTA, CATS, Charlotte to Burlington Commuter Rail), bicycle and pedestrian routes, ferries, intercity rail, intercity bus.
Discussion	This measure is broad indicator of the access provided by the transportation system. The more opportunities—via different modes—available to conveniently reach social and economic activities, the greater the access.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

	<p>elderly, the disabled, and youth.</p> <p>4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.</p> <p>5. Protect and enhance the region's built and natural environments, including land, water, and air resources.</p> <p>6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.</p> <p>7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.</p> <p>8. Consider ways to improve transportation system efficiency before increasing transportation capacity.</p> <p>9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.</p> <p>10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use process.</p>
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Average cost per person trip

Definition/Source	The total annual cost of transportation (operating, maintenance, engineering, construction, and out of pocket costs as determined by planning model) divided by the total number of surface based person trips (calculated by the CCMPO travel demand model).
Discussion	Cost measures can have three components: system costs, out of pocket costs, and social/externalized costs. This measure focuses on the first two elements but may also include the third if consensus can be reached.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment trends <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.

System-wide operation and maintenance costs

Definition/Source	The total annual operating, maintenance, engineering, and construction costs of the transportation system (as determined by planning model)
Discussion	This measure focuses on the first of the three possible cost elements.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment trends <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy

addressed	of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.
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Average Person trip out of pocket transportation costs

Definition/Source	The total annual out of pocket cost of transportation (as determined by planning model) divided by the total number of person trips (calculated by the CCMPO travel demand model).
Discussion	This measure focuses on the second of the three possible cost elements.
Methodology	<i>Projection:</i> Estimate based on maintenance and investment—public as well as private—trends. <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Bus service in low income/disadvantaged neighborhoods

Definition/Source	Total number of miles traveled annually by transit vehicles (CCTA, CATS) in or through Traffic Analysis Zones (TAZs) with household income less than 80 percent of the Chittenden County median
Discussion	This measure is a surrogate for the access provided to low income persons to reach desired locations via transit
Methodology	<i>Projection:</i> Estimate based on investment trends and results of CCMPO traffic model <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Travel options available to low income populations

Definition/Source	Total number of miles traveled annually by transit vehicles and other modes of transportation in or through Traffic Analysis Zones (TAZs) with household income less than 80 percent of the Chittenden County median
Discussion	This measure is a surrogate for the access provided to low income persons to reach desired locations via a range of modes.
Methodology	<i>Projection:</i> Estimate based on investment trends and results of CCMPO traffic model <i>Monitoring:</i> Track results over time.
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Air Pollution Emission

Definition/Source	Amounts of Volatile Organic Compounds (VOC), Oxides of Nitrogen (NOx), and Particulate matter (PM10) generated by the transportation system.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> Projected using air pollution planning models. <i>Monitoring:</i> Ongoing use of model and monitoring
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Number of people living near routes with high truck volumes

Definition/Source	Total population residing in Transit Analysis Zones located (all or in part) within one half mile of highways with truck volumes greater than 8 percent of the total AADT, as calculated by the CCMPO travel demand model.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Commercial Air Trips

Definition/Source	Number of one way commercial airline passenger trips annually to/from the Burlington International Airport.
Discussion	This is a measure of demand for commercial air service in the region.
Methodology	<i>Projection:</i> Estimate based on trends <i>Monitoring:</i> Track data from sampling of airlines providing service and/or from FAA
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Commercial Air Flights

Definition/Source	Number of one way commercial airline flights annually to/from the Burlington International Airport.
Discussion	This is a measure of supply of commercial air service in the region
Methodology	<i>Projection:</i> Estimate based on airline trends /planning models <i>Monitoring:</i> Track data from Burlington International Airport
Goal(s) potentially addressed	3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.

Transportation System Cost per Ton Mile of Freight

Definition/Source	The total annual operating, maintenance, engineering, and construction costs of the transportation system (as determined by planning model) divided by the total annual Ton Miles of Freight moved in the region (as determined by methodology used in Cambridge Systematics freight study)
Discussion	As noted above, cost measures can include system costs, out of pocket costs, and social/externalized costs. This measure, which is an indicator of the system's efficiency and cost effectiveness for moving freight, focuses on the first two elements (the third may be included if consensus can be reached).
Methodology	<i>Projection:</i> Projected/estimated using planning models and freight movement trends. <i>Monitoring:</i> Ongoing use of models and monitoring
Goal(s) potentially addressed	4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Average Arterial/Freeway Level of Service

Definition/Source	The average segment-based peak hour level of service (LOS) on arterials and freeways, as calculated by the CCMPO travel demand model.
Discussion	Level of service is a qualitative measure of a road's operating condition; generally described using a scale of A (little congestion) to E/F (severe congestion). When applied to freeway segments, LOS measures traffic density. When applied to arterials, LOS measures average travel speed.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Inter - Modal Transfers

Definition/Source	Relative number of inter modal transfers, on an annual basis
Discussion	This qualitative measure provides an indication of the degree to which modes of transportation are integrated and allow trip chaining using various modes to allow travelers to reach their final destinations.
Methodology	<i>Projection:</i> Subjective assessment <i>Monitoring:</i> Track data from CCTA (bike-transit boardings), VTA, other sources
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.

	10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.
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Vehicle hours traveled per person trip

Definition/Source	Ratio of the total number of vehicle hours traveled per day to the total number of person trips per day, as calculated by the CCMPO travel demand model.
Discussion	This measure is an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to time traveled
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Vehicle miles traveled per person trip

Definition/Source	Ratio of the total number of vehicle miles traveled per day to the total number of person trips per day, as calculated by the CCMPO travel demand model.
Discussion	This measure is also an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to distances traveled (and implicit consideration to land use patterns)
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Vehicle occupancy

Definition/Source	Countywide average number of persons per vehicle per vehicle trip.
Discussion	Vehicle occupancy reflects deliberate (planned) as well as spontaneous (unplanned) instances of ride sharing. Vehicle occupancy levels during peak hours can provide clues about potential utility of improvements such as high occupancy vehicle (HOV) lanes.
Methodology	<i>Projection:</i> Estimated using planning models <i>Monitoring:</i> Track modeling/sampling/census results over time.
Goal(s) potentially addressed	1. Preserve and improve the physical condition and operational performance of the existing transportation system. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

BTU per person trip

Definition/Source	Average number of British Thermal Units (BTUs) consumed per person trip, as determined by planning models.
Discussion	This quality of life/environment measure attempts to gauge whether the transportation system meets the needs of the present without compromising the ability of future generations to meet their own needs.
Methodology	<i>Projection:</i> Energy demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 5. Protect and enhance the region's built and natural environments, including land, water, and air resources. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity.

Peak Hour Mode Split

Definition/Source	Percent of total number of person trips occurring the peak hour taken by each of the following modes: personal vehicle, transit, bicycling and walking, as determined by the CCMPO travel demand model.
Discussion	This measure provides a direct measurement of the transportation system's relative reliance on any given mode. It helps gauge progress of efforts to reduce reliance on any given mode.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the elderly, the disabled, and youth. 4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive. 6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration. 7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there. 8. Consider ways to improve transportation system efficiency before increasing transportation capacity. 9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation. 10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.

Bus passenger hours / bus hours

Definition/Source	Ratio of the total number of hours traveled by bus passenger to the total number of hours of transit bus operation, as determined by the CCMPO travel demand model.
Discussion	This measure is an indicator of the transportation system's efficiency with respect to moving people, one that gives explicit consideration to travel undertaken using the transit mode.
Methodology	<i>Projection:</i> CCMPO travel demand model. <i>Monitoring:</i> Track modeling results over time.
Goal(s) potentially addressed	<ol style="list-style-type: none"> 1. Preserve and improve the physical condition and operational performance of the existing transportation system. 2. Support local and regional comprehensive planning and reinforce sustainable land use patterns and growth centers. 3. Create a transportation system that offers constantly improving safety, accessibility, flexibility, and comfort for all users, including the

	<p>elderly, the disabled, and youth.</p> <ol style="list-style-type: none">4. Establish a transportation system that minimizes the time and total cost of moving people and goods, thereby allowing the economy of the Region to thrive.5. Protect and enhance the region's built and natural environments, including land, water, and air resources.6. Improve the transportation system in a manner that builds community, increases the vitality of neighborhoods, and minimizes disturbance caused by noise, glare, and vibration.7. Provide levels of access and mobility that insure people and goods can get where they need to go, when they need to go there.8. Consider ways to improve transportation system efficiency before increasing transportation capacity.9. Establish a transportation system that uses diverse sources of power and maximizes energy efficiency and conservation.10. Develop a transportation system that features a variety of travel modes and encourages the reduction of single occupant vehicle use.
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November 22, 2000