

NORTHERN VIRGINIA TRANSPORTATION AUTHORITY

MEMORANDUM

FOR: Chairman Martin E. Nohe and Members
Northern Virginia Transportation Authority

FROM: Monica Backmon, Executive Director

DATE: December 8, 2014

SUBJECT: Approval of Principals for the Determination Long-Term Benefit

1. **Purpose:** To seek NVTA approval of the principals to determine the Long-Term Benefit of projects funded by the Authority using the 70 percent funding that the Authority retains for regional projects.
2. **Suggested Motion:** *I move approval of the Principals to Determine Long-Term Benefits.*
3. **Background.** HB 2313 requires that when allocating the 70 percent regional revenues, the Authority must ensure that each locality's long-term benefit will be approximately equal to the proportion of the revenues raised by the three taxes and fees in the respective locality. Since April 2014, a subcommittee of the Financial Working Group and the Council of Counsels have been meeting to prepare recommendations for the Authority's consideration on how to determine the long-term benefit by locality of the investments that the Authority will make in transportation projects. These recommendations were presented to the Authority at its work session on October 24, 2014. As a result of the Authority's discussion, some modifications were made to the subcommittee's long-term benefit document, see Attachment.
4. **Recommendation.** To seek Authority endorsement of the following guiding principles in determining the Long-Term Benefit of projects funded by the Authority using the 70 percent funding that the Authority retains for regional projects:
 - a. The determination of benefit should be kept as simple and transparent as possible, while meeting the legislative intent as efficiently as possible.
 - b. Any project included in the regional transportation plan (currently TransAction2040) can be considered "regional," because the plan is considered as a whole and is modeled as a whole, rather than as isolated projects.
 - c. The Authority will maintain an on-going analysis of benefit with no specific end point. In addition, this determination will be reviewed retrospectively every ten years to ensure

that benefits are relatively in balance with the proportion of the total of the fees and taxes received by the Authority generated by or attributable to each member locality. After these reviews, if it is determined that the benefit is not as proportional as required by law, adjustments can be made in future project selections to address any under representation of benefit. Only completed projects should be included in this periodic determination. The frequency of the reviews should be assessed in the future.

- d.** The benefit of projects implemented by the Washington Metropolitan Area Transit Authority and the Virginia Railway Express should be generally measured as follows:
 - i.** for system-wide projects, the benefits of the projects should be attributed to each of the nine localities based on the appropriate established cost-sharing formula (Metrorail, Metrobus, or VRE) for only those localities that are included in the formula who are also members of the Authority. This category would include the Alexandria and Crystal City stations for the VRE, since they are generally considered destination or system-wide stations. Improvements to these two stations are not the singular responsibility of Alexandria and Arlington, respectively. For Metrorail, the committee concluded that there are six stations which should be considered “core” station in Virginia. They are: Arlington Cemetery, Crystal City, Pentagon, Pentagon City, Ronald Reagan Washington National Airport, and Rosslyn. The benefits of improvements at these stations should be determined on a system-wide basis, rather than attributing all of the benefits to Arlington County. In the future, the Washington Dulles International Airport Station would also be considered a system-wide station. At some point, the Authority may also want to consider whether the East Falls Church Station should be considered a regional station.
 - ii.** for specific station or transit center improvements (i.e. platform extensions, additional parking, expanded bus bays, better access, additional vertical circulation, etc.) the benefits should generally be attributed to the locality in which the facility is located.
- e.** The majority of the benefits of multi-locality transit projects will be attributed to the localities in which the project is located.
- f.** For investments in local transit systems, the benefits will generally be attributed to the locality in which the transit system is located.
- g.** Congestion relief will be used as one of the two ways to determine benefit of roadway, bicycle, pedestrian, or intelligent transportation system projects. However, these benefits should be determined by using the cumulative impact of a system of improvements from implemented projects, rather than on a project by project basis.
- h.** The location of a roadway, bicycle, pedestrian or intelligent transportation system project will be the other factor used in determining benefit.

In summary, the two methods for determining the benefits of roadway, bicycle, pedestrian or intelligent transportation system projects should be congestion relief, as modeled using the regional travel demand model (or state of the modeling practice in the future) for all of the projects selected, and the locations of the projects.

The Authority will generally focus on primary benefits.

Attachments: Measuring Long Term Benefits White Paper

Measuring Long-Term Benefit

Revised: December 8, 2014

Executive Summary

HB 2313 requires that when allocating the 70 percent regional revenues, the Authority must ensure that each locality's long-term benefit will be approximately equal to the proportion of the revenues raised by the three taxes and fees in the respective locality. Since April 2014, a subcommittee of the Financial Working Group and the Council of Counsels have been meeting to prepare recommendations for the Authority's consideration on how to determine the long-term benefit by locality of the investments that the Authority will make in transportation projects.

The subcommittee general believes that this determination should be as simple and transparent as possible, while meeting the legislative intent as efficiently as possible.

Before addressing long-term benefit specifically, the subcommittee discussed how to determine whether a project is regional or not. The subcommittee recommends that the Authority consider any project included in its TransAction 2040 (and subsequent updates) as "regional," since the TransAction 2040 Plan is modeled as a whole, rather than by individual projects.

The subcommittee believes that the use of the word "approximately" equal in the statute provides some flexibility to the Authority, and leads to the conclusions that determination of benefit is not a mathematical or strictly financial calculation.

The subcommittee discussed the length of time that should be considered when determining benefit. It recommends that the Authority assess benefit on a retrospective basis every ten years, and use the results in subsequent project selection processes to address any inequities. The subcommittee also believes that "long-term" ultimately has no specific end, so that the benefit determination should continue to recur every ten years. The frequency of these determinations can be reassessed in the future.

For transit projects, the subcommittee recommends that the determination of benefit for system-wide Washington Metropolitan Area Transit Authority and Virginia Railway Express projects be based on subsidy allocation formulas for the Authority member localities that are also members of each of these agencies. Improvements to the core Virginia stations for each of these systems should also be included in the system-wide calculations. Other station improvements should primarily benefit the locality in which the station is located. For multi-locality transit projects, the benefit should primarily be to the localities involved. For local transit projects, the benefit should primarily be to the locality in which the project is located.

For roadway, bicycle, pedestrian and intelligent transportation system (ITS) projects, the subcommittee recommends that benefit be determined in two ways. First, using the regional travel demand model (or

future improved analysis tool), the congestion relief benefits of all Authority-funded the projects completed by the analysis year should be calculated by the jurisdiction of residence of the users of these completed facilities. Second, benefit should be assessed based on the localities in which the projects are located. The subcommittee believes that location of a project is a surrogate for many other benefits, such as economic development and safety. The subcommittee does not recommend that secondary benefits of project be assessed, since doing so would add significant complications and effort to the determination and probably would not produce significantly different results than using congestion relief and location.

Background

In approving HB 2313, the General Assembly authorized three new transportation revenue sources for Northern Virginia. They are: A 0.7 percent increase in the sales tax; a two percent increase in the transient occupancy (hotel) tax; and a ten cent increase in the grantor's tax (congestion relief fee). These taxes were effective on July 1, 2013, and apply in the nine cities and counties who are members of the Northern Virginia Transportation Authority.

Of these revenues, 30 percent are returned to the localities (assuming each individual locality has met specific conditions), based on the revenues generated in or attributable to each locality. This revenue can be used for "additional urban or secondary road construction; for other capital improvements that reduce congestion; for other transportation capital improvements which have been approved by the most recent long range transportation plan adopted by the Authority; or for public transportation purposes".

The remaining 70 percent is to be used by the Authority "solely for transportation projects and purposes that benefit the counties and cities embraced by the Authority to fund (i) transportation projects selected by the Authority that are contained in the regional transportation plan or (ii) mass transit capital projects that increase capacity". HB 2313 also directs that the Authority "shall give priority to selecting projects that are expected to provide the greatest congestion reduction relative to the cost of the project and shall document this information for each project selected".

In addition, HB 2313 specifies that when allocating the 70 percent regional revenues, the Authority must ensure that each locality's long-term benefit will be approximately equal to the proportion of the revenues raised by the three taxes and fees in the respective locality [1]. The General Assembly did not define "long-term," "benefit" or "approximately equal." As a result, the Authority was left to determine how to apply these terms and how to determine benefit and attribute it to member localities. In addition, the Authority will need to track the revenues collected in each locality over time.

To implement HB 2313, the Authority re-established five working groups that were originally created in 2007 to implement HB 3202, and gave each working group a charge. The Authority's charge to the Financial Working Group included providing recommendations to that Authority, in conjunction with the

[1] Actual language from Code of Virginia: "With regard to the revenues distributed under subdivision 1, each locality's total long-term benefit shall be approximately equal to the proportion of the total of the fees and taxes received by the Authority that are generated by or attributable to the locality divided by the total of such fees and taxes received by the Authority."

Council of Counsels, on how to determine long-term benefit. The Financial Working Group established a Long-Term Benefit Subcommittee that has been meeting since April 2014 to address this portion of the Financial Working Group's charge. The Council of Counsels participated in the subcommittee meetings and provided legal advice as necessary, including review of this document. The subcommittee reviewed the "long-term benefit" language included in HB 2313, and the policy that was developed in 2007 to allocate revenues from HB 3202. As a tax statute, the constitutionality of HB 2313 depends on the ability of the Authority to ensure that the tax revenues benefit the entire region, rather than a specific area or locality. The statute also requires the Authority to ensure that the proportionality requirement contained in the legislation is satisfied. The Council noted that Judge Dennis Smith approved the way the Authority allocated its FY 2014 revenues in his ruling in the Authority's bond validation case. This concept of geographic balance is important to the constitutionality of the statute. As noted below, the determining benefit is not strictly a financial calculation, such as dollars spent in each locality, because "benefit" can be determined in different ways. Some of these ways are not easily monetized.

As the subcommittee began its discussions, **there was a general consensus that the Authority should try to keep the determination of benefit as simple and transparent as possible, while meeting the legislative intent as efficiently as possible.** There was concern that an elaborate method of measuring benefit could be costly, and such an approach would reduce the amount of funding that the Authority has to spend on projects. In addition, it was also recognized that the Authority has a very small staff. Whatever form of determination is developed cannot be overly labor intensive, because the staff resources are not available to continue to maintain a complicated analysis. The subcommittee also recognized that there are existing tools available (and in the future, better regional tools may be developed) to assist the Authority with this analysis. It is anticipated that the state of the practice for modeling tools will change over time.

The subcommittee noted that the Project Implementation Working Group and the Jurisdiction and Agency Coordinating Committee are focused on project selection, based on criteria established by the Authority. Also, the determination of benefit should not be a criterion used in allocating funding to projects, although "geographic balance" is a selection criterion. The qualitative criterion of geographic balance plays an important role in project selection on an annual basis, along with numerous other criteria. The subcommittee generally believed that if this criterion is reasonably applied at project selection, it increases the likelihood that long-term benefit will be achieved when it is determined in the future. The subcommittee also felt that it was important to clarify the definition of "regional projects."

The following summarizes the subcommittee's discussions and recommendations to address each of the major terms outlined in HB 2313.

Regional Projects

There was some discussion about the kinds of projects that should be considered "regional." The subcommittee recommends that the language used in HB 2313 should be used as the guide for

determining whether a project is “regional” or not. HB 2313 allows the Authority to use its portion of the regional funding for “transportation projects and purposes that benefit the counties and cities embraced by the Authority to fund (i) transportation projects selected by the Authority that are contained in the regional transportation plan or (ii) mass transit capital projects that increase capacity.” In keeping with this statutory direction, the **subcommittee recommends that any project included in the regional transportation plan (currently TransAction2040) can be considered “regional,” because the plan is considered an a whole and is modeled as a whole, rather than as isolated projects.** Each of the projects included in TransAction 2040 contribute to improving mobility in the region.

Approximately Equal

The subcommittee believes that the General Assembly’s inclusion of the word “approximately” is intended to provide flexibility to the Authority in terms of how benefit is determined. The General Assembly did not use the word “exactly” which is a reflection of the fact that any determination of benefit will not be an exact mathematical calculation. The word “approximately” is more appropriate, because revenues will fluctuate with the economy and travel patterns will change. This makes a strict calculation of benefit impractical.

Long-Term

Since HB 2313 did not define, “long-term,” the Authority has discretion in determining the duration to be determined. The dictionary defines “long-term” as “lasting for, relating to, or involving a long period of time.” The Long-Term Benefit Subcommittee of the Financial Working Group considered several durations for “long-term.” They included:

- five years,
- the length of a Six Year Program;
- ten years;
- 20 years; and
- the horizon of the long range transportation plan (currently TransAction 2040).

Initially, the subcommittee believed that the length of the Six Year Program would constitute a minimum and probably be sufficient. There was concern about keeping records for an extended period of time. For example, the Washington Metropolitan Area Transit Authority had difficulty reconciling the cost of the 103-mile Metrorail system. In that case, construction spanned 40 years. When the construction was complete, some of the records needed to conduct the reconciliation were no longer available. There was also concern that while TransAction 2040 has about a 30-year horizon, the plan is financially unconstrained, and, therefore, it isn’t clear that the entire plan will be funded. In addition, priorities and approaches could change over that period of time. There was general consensus that five years was too short. The Authority’s Technical Advisory Committee also discussed the definition of “long-term” and recommended to the Authority that this time frame should be no less than six years.

There was also consensus that determining benefit annually was impractical, since most projects will take multiple years to implement and large projects can take as many as ten years to complete. In addition, typically existing models focus on specific analysis years.

After discussion, the subcommittee was leaning toward recommending that “long-term” be defined as the length of the Six Year Program. However, based on additional conversations after the discussion of the definition of “benefit,” the subcommittee concluded that “long-term” in this context does not have an endpoint.

The subcommittee recommends that the Authority maintain an on-going determination of benefit with no specific end point. In addition, the subcommittee recommends that this determination be reviewed retrospectively every ten years to ensure that benefits are relatively in balance with tax collections. After these reviews, if it is determined that the benefit is not as proportional as required by law, adjustments can be made in future project selections to address any under representation of benefit. Also, the subcommittee recommends that only completed projects be included in this periodic determination. The frequency of the reviews should be assessed in the future.

Several members of the Technical Advisory Committee questioned whether ten years was too long and whether taxpayers and elected officials would want to see benefits before then. The subcommittee discussed these concerns and concluded that as a result of the annual project selection process, taxpayers and elected officials will know which projects are moving forward. In addition, public events like ground breakings, ribbon cuttings and actual construction are also ways to inform taxpayers and elected officials that the Authority’s funds are being used to benefit various parts of the region during the time between the formal assessments that are proposed for every ten years.

A member of the Technical Advisory Committee was also concerned that a project completed in year one might lose its benefit by year ten. The subcommittee did not believe that this would be the case. Most transportation projects have a useful life of at least 20 years. In addition, transit buses typically have a useful life of at least 12 years.

Two members of the Technical Advisory Committee also suggested the concept of a rolling analysis of beginning after six years and then undertaken annually. The subcommittee believes that this approach would be very labor intensive and not necessarily an effective use of the Authority’s resources.

The use of the benefit determination in subsequent project selection efforts was supported by a member of the Technical Advisory Committee.

Benefit

Since “benefit” is not defined in the statute, the subcommittee looked at numerous ways to determine benefit. The subcommittee reviewed the factors included in the Authority’s authorizing legislation, the factors used in TransAction 2040, and the factors included in HB 599 (2012). Although some

subcommittee members advocated the use of a simple calculation of dollars spent in each locality, the consensus of the subcommittee recognized that “benefit” should not be a strictly financial calculation, such as dollars spent in a locality or the conversion of benefit measures, like travel time savings, into monetary terms. The subcommittee believes that such a financial calculation would be inconsistent with both HB 2313 and the Fairfax County Circuit Court’s ruling on the Authority’s bond validation suit. The subcommittee further noted that by returning 30 percent of the revenues to the localities, based on collection, each locality that qualifies has the ability to determine how those funds are spent. While each locality has a vote on how the Authority spends the 70 percent funding it retains, the decisions about how these funds are spent rest with the Authority as a whole.

In trying to determine the benefits of projects, the subcommittee considered a variety of existing ways that the Authority or others are already employing. The rationale for this approach was to try to use work that is already being conducted to minimize the cost of determining benefit and allow more funding to be allocated to projects. This approach will also allow limited staff time to be employed to other more important activities. While the subcommittee considered multiple benefit measures, and the possibility of measuring benefit differently depending on the type of project, in the end the subcommittee opted for a more simplified methodology in which the benefits of all non-transit projects are determined in the same way.

Regional Transit Agencies

Some of the Authority’s funding will be allocated to projects associated with the Washington Metropolitan Area Transit Authority (WMATA) and the Virginia Railway Express (VRE). This category only affects projects being undertaken by these two agencies. Other transit projects that have benefits across localities are discussed in the “Multi-Locality Benefits” section below. The allocation of funds to these agencies presents some challenges based on the restrictions included in HB 2313. It was noted that both agencies have existing formulas for allocating local subsidies. The Metrorail formula takes into account population, population density, ridership and stations. The Metrobus formula includes population, population density, ridership, miles of service and hours of service. The current Authority members who are also members of WMATA Compact are: the City of Alexandria, Arlington County, the City of Fairfax, Fairfax County, the City of Falls Church, and Loudoun County. (Although Loudoun County is a member of the WMATA Compact, it will not become a contributing member until Phase 2 of the Silver Line opens in 2018. In the future, it is anticipated that Loudoun County will also be a member). The VRE formula is based on ridership for the Participating Jurisdictions (Fairfax, Manassas, Manassas Park and Prince William). (Arlington and Alexandria are Contributing Jurisdictions whose subsidies are calculated differently). While there was some sentiment that the benefits of projects implemented by these agencies should be determined similar to roadway projects, there was also concern that determining benefit differently than the funding formulas could lead to confusion and potentially inequity and/or conflict. In addition, the funding formulas for allocating local subsidies for these two regional providers have been designed with benefit in mind, rather than each locality paying for the projects constructed in that locality.

Accordingly, **the subcommittee recommends that the benefit of projects implemented by these two regional agencies be generally measured as follows:**

- **for system-wide projects, the benefits of the investments should be attributed to each of the nine localities based on the appropriate established cost-sharing formula (Metrorail, Metrobus, or VRE) for those localities that are included in the formula and are members of the Authority only. This category would include the Alexandria and Crystal City stations for the VRE, since they are generally considered destination or system-wide stations. Improvements to these two stations are not the singular responsibility of Alexandria and Arlington, respectively. For Metrorail, the committee concluded that there are six stations which should be considered “core” station in Virginia. They are: Arlington Cemetery, Crystal City, Pentagon, Pentagon City, Ronald Reagan Washington National Airport, and Rosslyn. The benefits of improvements at these stations should be determined on a system-wide basis, rather than attributing all of the benefits to Arlington County. In the future, the Washington Dulles International Airport Station would also be considered a system-wide station. At some point, the Authority may also want to consider whether the East Falls Church Station should be considered a regional station.**
- **for specific station or transit center improvements (i.e. platform extensions, additional parking, expanded bus bays, better access, additional vertical circulation, etc.) the benefits should generally be attributed to the locality in which the facility is located.**

Regarding the WMATA subsidy allocation, the Federal Transit Administration now requires transit agencies to conduct a ridership survey for each mode every five years. WMATA complies with this requirement. If this requirement or WMATA’s practice changes, it may be necessary for the Authority to work with WMATA to secure the availability of the most current ridership data. In this event, the Authority could consider funding a survey for the Virginia portions of the WMATA system. The survey would be conducted by WMATA in the same way it conducts its other periodic surveys.

A member of the Technical Advisory Committee suggested using Person Miles Traveled rather than the approach outlined above; however, the subcommittee believed that doing so could lead to contradictory results, and this alternative approach would require significant modeling resources.

Multi-locality Transit Projects

Multi-locality transit projects, such as the Crystal City-Potomac Yards Busway and the Columbia Pike Streetcar (if it had been implemented) are becoming more common in Northern Virginia. The benefits of these types of projects will need to be determined on a case by case basis. However, in general, **the subcommittee believes that the majority of the benefits of multi-locality projects will be attributed to the localities in which the project is located.**

Local Transit

For investments in local transit systems, the benefits will generally be attributed to the locality in which the transit system is located.

Roadway Projects

The existing measures considered for determining the benefit of roadway projects included measures from TransAction 2040, the HB 599 study being conducted by VDOT, and the Authority's FY 2014 Project Selection Process. The subcommittee also discussed the new Commonwealth Transportation Board project selection process stipulated by HB2. However, since the details of this selection process are still being developed, it probably will be some time before using parts of the HB 2 process can be considered. In addition, HB 2 does not include any requirements for determining the benefits of transportation investment by locality as HB 2313 does.

Factors from TransAction 2040, HB 599 and the FY 2014 Project Selection Process that the subcommittee considered for determining benefit include:

- Congestion Relief
- Safety
- Connections between Activity Centers
- Multimodal Choices
- Air Quality
- Freight Movement
- Intelligent Transportation Systems

Most of the subcommittee's discussions were focused on the congestion relief criteria, because this is a primary factor in HB 2313. There was unanimity that "congestion relief" is an important benefit factor. In this context "congestion relief" is measured by comparing the project level of congestion in a future analysis year with the Authority funded projects in the model to the level of congestion without the Authority funded projects in the model. It is acknowledged that even with the Authority funded projects, congestion in the future could be worse than it is today, due to population, employment and household growth in the future. The subcommittee recognized that the region has existing analysis tools (such as the regional travel demand model's selected link analysis) that can measure some congestion impacts of constructing a specific project or a group of projects on congestion. The travel demand model produces a number of different metrics, including travel time savings. The current tools can estimate the number of users of a highway facility or group of facilities by locality. If improvements are made to a group of facilities, then each of the jurisdictions who have users on these facilities will benefit. However, it is also true that the benefits are reduced as the distance from the locality increases. In general, the subcommittee believes that the combination on all the Authority funded projects completed at a certain point in time should be used in the travel demand model. Using a

network of improvements is a more practical way to determine benefit, rather than determining the benefit of each project individually and then trying to combine the benefits from a number of projects. This approach simplifies the analysis, but also provides more useful results. For example, if 15 Authority funded projects are completed by 2020, all of these projects would be added to the travel demand model, and the net congestion relief benefit of these projects would be determined, compared to congestion without these 15 projects. In this case, projects completed in the same time frame, but funded from other sources, would be included in the baseline, before the projects the Authority funded are added.

However, not all trips are correctly captured by existing models, especially in areas with heavy multimodal use. The subcommittee noted that some new analysis tools may be developed for the HB 2 analysis. It is anticipated that the state of the practice for modeling tools (and any other analysis tools the Authority deems appropriate) will change over time, and the most sophisticated regional modeling tools available should be used to assist the Authority with this analysis, if available. This concept was also supported by a member of the Technical Advisory Committee who noted that new forms of data collection and analysis are being developed.

One locality also suggested using “person capacity” and “travel time” as factors to determining congestion benefits. The locality stated that measuring changes in person capacity directly measures the ability of transportation system to carry more people. The subcommittee disagreed, because simply measuring added capacity does not take into account the congestion on a facility in the first place. This approach could lead to added capacity to facilities that aren’t congested. In addition, the subcommittee noted that the regional travel demand model does use travel time as a factor in the model, in addition to others.

A member of the Technical Advisory Committee pointed out that many travelers will not see congestion relief over the existing condition as a result of the implementation of the Authority-funded projects. The Authority funded projects will more likely ensure that congestion in the future will not be worse than it is today, despite continuing growth. The subcommittee acknowledges that this may be the case for some projects, and the point should be included. However, by modeling a group of Authority funded projects together, there likely will be improvement over the current condition on some parts of the network.

The Technical Advisory Committee member noted that individuals can often secure a congestion relief benefit by changing residences (i.e. locating closer to work), and as a result, public agencies should not be the only groups focused on congestion relief. In general, the subcommittee agreed that location of residence is a factor in achieving congestion relief, but this concept is outside the scope of determining the benefit of projects funded by the Authority.

The subcommittee recommends that the Authority use congestion relief as one of two ways to determine benefit. However, these benefits should be determined by using the cumulative impact of

a system of improvements on the transportation network from implemented projects, rather than on a project by project basis.

The subcommittee also did not believe that the following TransAction 2040 measures were practical for measuring benefit: Improved Bicycle and Pedestrian Travel Options, Urgency, Project Readiness, Reductions in Vehicle Miles Traveled, Person Throughput, Reduced Travel Time; Environmental Sensitivity, Land Use Supportive Investments, Management and Operations, and Cost Sharing. Measuring Economic Development was also discussed. Several of these items (such as Reductions in Vehicle Miles Traveled, Person Throughput, Reduced Travel Time) are addressed in measuring reduced congestion on roadways. Others are qualitative measures that result in benefits to the locality where the project is located. As a result, although strict “dollars spent in a locality” is not an appropriate way to determine benefit in this case, it is clear that the locality where a project is located does receive benefits beyond “Congestion Relief” from the implementation of a new investment.

As a result, **the subcommittee recommends that “location of a project” be a factor used in determining benefit.** Doing so is much easier than trying to measure the individual benefits of things like land use supportive investments, safety or economic development.

After discussing each of the other factors above, the subcommittee agreed that while Safety, Connections between Activity Centers, Multimodal Choices, and Freight Movement are important; they are more practically applied as selection criteria, rather than determination of benefit.

Air Quality is also an important consideration; however, it is determined regionally, and there is not an existing tool to segregate in the air quality benefits of a project by individual locality.

HB 599 includes two criteria, Congestion Relief and Emergency Evacuation. Congestion Relief has previously been addressed, and the subcommittee believes that Emergency Evacuation is more a selection criteria, than a determination of benefit. It is also something that is more appropriate in a regional context than it is by individual locality.

In reviewing the FY 2014 project selection criteria, the subcommittee did not find any additional criteria that should be considered for the determination of benefit. Most were either previously discussed or not appropriate (such as Project Readiness) for determining benefit.

The subcommittee discussed whether “benefit” should be determined over the life of a project, the end point or at some other fixed point. The travel demand model typically focuses on specific analysis years, such as 2020, 2030 and 2040. Data is typically not available to conduct the analysis for each individual year. The model can be run with and without a project or group of projects to determine the specific impact on travel of a specific improvement(s). This supports the concept of conducting a calculation of the Congestion Relief benefit at ten year intervals to determine whether the allocation of projects has been proportional or not.

Some of the outer localities were concerned that since they export commuters to the core of the region that the benefits that these localities are entitled to, could be “used up” by projects in the core of the region. It was noted that even in Fairfax County, almost 50 percent of the workers go to a job outside the County, so the concept of exporting workers is not unique to the outer localities. In addition, work trips only comprise about 20 percent of the trips taken every day. The other 80 percent of time are for shopping, education, recreation, dining etc. These trips are often taken closer to a person’s home. Finally, determining benefit for a system of project improvements, rather than individual projects, should also minimize this concern.

Some core jurisdictions were concerned that the Authority would allocate a large percentage of roadway funding to projects in the outer localities, because the core localities are largely built out and do not anticipate major roadway expansions in the future. Ultimately, the subcommittee concluded that the Authority’s project selection process is robust enough to address these concerns.

A member of the Technical Advisory Committee disagreed with the proposed approach of using location of a project as a factor for determining benefit. This member felt that congestion relief benefits should be credited to a jurisdiction regardless of where they occur. The subcommittee agrees for congestion relief benefits should be determined based on jurisdiction of residence of the users regardless of where they occur; however, the subcommittee also believes that the physical location of a project also has benefit to the specific locality, as outlined above. No changes were made to the recommended approach.

In summary, the subcommittee recommends that the two methods for determining the benefits of roadway projects be congestion relief, as modeled using the regional travel demand model (or state of the modeling practice in the future) for all of the projects selected, and the locations of the projects.

Primary and Secondary Benefits

In reviewing the criteria used in each of the various efforts (TransAction 2030, the HB 599 analysis and the FY 2014 project selection criteria), it was noted that some of the criteria are quantitative while others are qualitative. The subcommittee discussed whether to focus on primary benefits or also to include secondary benefits. Primary benefits include things like congestion relief. Secondary benefits may be things like economic development or job growth. For practical reasons and in the interest of keeping the determination as simple as possible, **the subcommittee recommends that the Authority generally focus on primary benefits.** Secondary benefits could be used as a qualitative way to compliment the results of determining primary benefits, if desired. There may be many secondary benefits from a project or group of projects, but it will be difficult to determine where/when these factors no longer apply. Those conclusions, coupled with the fact that including secondary benefits would add significant complexity and time to the process, are reasons why the subcommittee is recommending that secondary benefits be excluded. Moreover, the subcommittee did not believe that

the inclusion of secondary benefits would significantly change the overall outcome of the determination process.

Bike and Pedestrian Projects

The travel demand model can calculate the congestion relief benefits of bicycle and pedestrian investments on the adjacent roadway network. As a result, **the determination of benefit for bicycle and pedestrian projects does not need to be done differently than roadway projects.**

Intelligent Transportation Systems (ITS)

The subcommittee recognized that ITS projects, such as real time traffic signal controls, are significantly different than physical roadway improvements. Several methods of measurement were discussed, including person throughput, hours of person delay, response time to emergencies and safety. However, in the end, **the benefits of these types of improvements can be determined in terms of congestion relief (person through put and hours of delay) and benefits to the locality in which the ITS improvement is located** (emergency response times and safety).

Other Considerations

The subcommittee also discussed whether benefit should be determined prospectively or retrospectively. Initially, there was some support for determining benefit prospectively when project funding is allocated by the Authority. However, there was concern that projects will be completed at different times and the ultimate benefit could be different than projected benefit. This would still require a retrospective look at some point. There was also concern that the project selection process proceed independently from the benefit determination process at least initially. Although it was suggested that the Authority adopt a specific allocation of benefit at the time each project is selected, this concept was also rejected for similar reasons, including the fact that actual benefits may vary from the benefits identified at the time the project is approved.

It was also noted that the governing bodies of some localities might agree that there is significant benefit to roadway improvements made in an adjacent jurisdiction. For example, the Cities of Manassas and Manassas Park might agree that improvements to Route 28 south of I-66 in either Prince William or Fairfax County would generate a significant benefit for their localities.

The subcommittee also discussed a scenario where a locality might oppose a project even though it has a benefit to that locality. The subcommittee concluded that it is unlikely that the Authority will fund and implement a project in a locality that does not want the project. However, it is possible that a locality may benefit from a project in an adjacent locality, even if the locality doesn't support the project.

Manassas Park Resolution

During the subcommittee's discussions, the Manassas Park Governing Body passed a resolution saying that the variance between a dollar collected in a locality and dollar spent in a locality calculation should be no more than five percent.

This concept was discussed by the subcommittee; however, it was not included in the final recommendation for two primary reasons: 1) whether intended by the City or not, the nature of the resolution seems to indicate that each individual locality controls how the 70 percent funding collected in the locality is spent (or have significant input into whether benefit is assigned to a locality from a project outside the locality). The subcommittee believes this concept is inconsistent with HB 2313. HB 2313 returns 30 percent of the funding to the local governments and allows each governing body to determine how these funds are to be spent, within the requirements of the law. However, the 70 percent is retained by the Authority and decisions regarding these funds are to be made regionally. The Authority is also charged with determining the benefit of the projects it funds. Each of the nine localities will have the opportunity to participate in the Authority's decision making process.

2) As stated earlier the calculation of benefit, as outlined in HB 2313 is not envisioned to be a simple mathematic calculation. As a result, it would be difficult to abide by a five percent variance between dollars collected and dollars spent in a locality.

Other Concepts Discussed, but Not Included

A member of the Technical Advisory Committee expressed a concern that the benefit document does not include any discussion about expansion of the Authority's boundaries in the future and how an expansion could affect the determination of benefit. The subcommittee discussed this comment, but felt that if the Authority's boundaries are expanded in the future, there will be many different issues that would need to be addressed. Modifying the benefit determination approach would likely be one of these issues. The subcommittee believes that any boundary changes would take time to implement, and there would be sufficient time to address the need for changes to the benefit determination approach.

During the work session on October 24, 2014, Authority members expressed concerns about how the benefits of projects located on the western and southern edges of region will be determined, since the benefits of these projects might largely be to jurisdictions outside the Authority's boundary. In general, staff believes that projects that don't have a substantial benefit to at least one Authority member locality probably won't be funded by the Authority.

Conclusions

There was a general consensus that the Authority should try to keep the determination of benefit as simple and transparent as possible, while meeting the legislative intent as efficiently as possible.

Subcommittee recommends that any project included in the regional transportation plan (currently TransAction2040) can be considered “regional,” because the plan is considered a whole and is modeled as a whole, rather than as isolated projects.

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The subcommittee recommends that the Authority maintain an on-going determination of benefit with no specific end point. In addition, the subcommittee recommends that this determination be reviewed retrospectively every ten years to ensure that benefits are relatively in balance with tax collections. After these reviews, if it is determined that the benefit is not as proportional as required by law, adjustments can be made in future project selections to address any under representation of benefit. Also, the subcommittee recommends that only completed projects be included in this periodic determination. The frequency of the reviews should be assessed in the future.

The subcommittee recommends that the benefit of projects implemented by these two regional agencies be generally measured as follows:

- **for system-wide projects, the benefits of the projects should be attributed to each of the nine localities based on the appropriate established cost-sharing formula (Metrorail, Metrobus, or VRE) for those localities that are included in the formula and are members of the Authority only. This category would include the Alexandria and Crystal City stations for the VRE, since they are generally considered destination or system-wide stations. Improvements to these two stations are not the singular responsibility of Alexandria and Arlington, respectively. For Metrorail, the committee concluded that there are six stations which should be considered “core” station in Virginia. They are: Arlington Cemetery, Crystal City, Pentagon, Pentagon City, Ronald Reagan Washington National Airport, and Rosslyn. The benefits of improvements at these stations should be determined on a system-wide basis, rather than attributing all of the benefits to Arlington County. In the future, the Washington Dulles International Airport Station would also be considered a system-wide station. At some point, the Authority may also want to consider whether the East Falls Church Station should be considered a regional station.**
- **for specific station or transit center improvements (i.e. platform extensions, additional parking, expanded bus bays, better access, additional vertical circulation, etc.) the benefits should generally be attributed to the locality in which the facility is located.**

The subcommittee believes that the majority of the benefits of multi-locality projects will be attributed to the localities in which the project is located.

For investments in local transit systems, the benefits will generally be attributed to the locality in which the transit system is located.

The subcommittee recommends that the Authority use congestion relief as one of the ways to determine benefit of roadway, bicycle, pedestrian, or intelligent transportation system projects. However, these benefits should be determined by using the cumulative impact of a system of improvements from implemented projects, rather than on a project by project basis.

The subcommittee recommends that location of a roadway, bicycle, pedestrian or intelligent transportation system project be a factor used in determining benefit.

In summary, the subcommittee recommends that the two methods for determining the benefits of roadway, bicycle, pedestrian or intelligent transportation system projects be congestion relief, as modeled using the regional travel demand model (or state of the modeling practice in the future) for all of the projects selected, and the locations of the projects.

The subcommittee recommends that the Authority generally focus on primary benefits.