

Launching the 2014 CTP Update

January 17, 2013-- DRAFT

When they approved Measure J in November 2004, the voters of Contra Costa reaffirmed the importance of the collaborative process of transportation planning and growth management first established by Measure C in 1988. This process, outlined in the Measure J Expenditure Plan and its Growth Management Program (GMP), requires local jurisdictions to collaborate in an ongoing, multijurisdictional planning process. Working through their Regional Transportation Planning Committees (RTPCs), each local jurisdiction must participate in a consensus-based process to create Action Plans for Routes of Regional Significance. These plans identify performance objectives for the regional transportation network and actions for achieving them as well as a process for managing the impacts of growth in their subarea.

The GMP also requires local jurisdictions to help the Authority develop its Countywide Comprehensive Transportation Plan (CTP). The CTP outlines the Authority's vision, goals, and long-range strategy for achieving its mission — to deliver a comprehensive transportation system that enhances mobility and accessibility, while promoting a healthy environment and strong economy. Key to the success of the CTP is its reliance on the objectives and actions established in the cooperatively developed Action Plans. The result of this challenging effort is a program of strategies and actions to develop and maintain a balanced, safe, and efficient transportation system for the decades to come.

This paper outlines how we propose to update both the CTP and the Action Plans to respond to the challenges we face in creating this balanced transportation system and to address the impacts of forecast growth. This paper outlines some of the issues we expect to face, the essential roles that local jurisdictions and the RTPCs will play in this process, and the concurrent activities at the State, regional, and countywide levels that will influence the CTP Update. There have been significant changes since the adoption of the

last CTP in 2009, and the 2014 CTP update, with its new focus on a 2040 horizon year, will give us all an opportunity to respond to those changes, refine our objectives, and create a blueprint for the future.

Focus on the 2014 CTP Update and the Action Plans

2014 CTP UPDATE

The CTP “lays out the Authority’s vision for Contra Costa’s future, the goals and strategies for achieving that vision, and future transportation priorities.” The update of the CTP gives us an opportunity to reflect changing demographics, completed projects, new legislation, the latest technology, and the evolving vision of the county’s future. This evaluation will cover the CTP’s goals, the performance measures and actions from the Action Plans, the Comprehensive Transportation Project List (CTPL), and implementation program. The CTP Update will be led by Authority staff with support from consultants Dyett & Bhatia and will consider issues at both the countywide and sub-regional level through the CTP Task Force and RTPCs/TACs, respectively.

One key task of the CTP update process will be updating the CTP goals. We believe the updated goals should be shorter and more succinct, align with regional and state initiatives, provide flexibility in implementation, transition from big projects toward efficiency and intelligent transportation systems (ITS), and lay the groundwork for a possible Measure J renewal/extension.

The horizon for the updated CTP will be the year 2040 and will use ABAG *Projections 2013*. This will align the CTP with the forthcoming RTP (Plan Bay Area). The goal is to complete have a draft CTP and environmental document ready for public review by the end of December. This would allow the CTP Update to be adopted in May 2014.

RTPC Role *Provide input on suggested changes to the CTP goals in line with Authority staff guidance*

ACTION PLAN UPDATES

As with the CTP, the Action Plan requirement has its basis in Measure C (1988). The Action Plan requirement reflects the understanding that no one jurisdiction can solve the

problems of roads that serve both local and regional traffic. Measure J requires the Action Plans to establish Multimodal Transportation Service Objectives (MTSOs) for each Regional Route and actions to achieve them. It also requires these plans to establish a process for environmental consultation, and a schedule and procedure for review of certain development projects.

The Action Plan updates will be an opportunity to review conditions and affirm or update the MTSOs to better match local conditions and the actions identified to achieve them. MTSOs do not need to be “one size fits all” nor do they need to focus solely on levels of service for vehicles. The MTSOs are meant to reflect what kind of performance the subregions hope to achieve on the Regional Routes: Is vehicle throughput key or is reliability more important? Is improving pedestrian safety and connectivity key or is transit time and reliability? Should the MTSOs differ in different segments of the Regional Routes to reflect the surrounding land use context? The use of a broader range of performance measures is receiving greater emphasis from the federal, State and regional transportation agencies. (MTC, for example, is using economic and environmental measures as well as more traditional transportation measures in its current SCS/RTP process.)

The Action Plans may take a different perspective on issues of concern, such as a greater emphasis on alternative modes of travel and their needs rather than a roadway focus. The Action Plans and MTSOs will also need to respond to the Complete Streets Act, Plan Bay Area (including its emphasis on accommodating greater growth within PDAs), and the RHNA.

While the Action Plans don’t need to be “financially constrained”, the RTPCs may want to consider setting priorities for funding. The 2014 CTP will likely be used to help set Contra Costa’s recommendations for the next RTP and, possibly, a reauthorization of Measure J.

A consultant team lead by DKS Associates has been selected to assist the RTPCs with the Action Plan updates. Each RTPC will have its own project manager.

RTPC Role *Work with consultant team to select project manager for Action Plan updates and begin update process. Critically evaluate existing Action Plans and MTSOs in light of current effectiveness, outcomes, and anticipated changes*

Proposed Schedule

<i>Date</i>	<i>Action</i>	<i>Responsible Party</i>
September 2012	Start up	CCTA
November-March 2013	MTSO Monitoring	CCTA
November 2012 - January 2013	Retain Action Plan and Outreach Consultants	CCTA
January – June 2013	Develop Administrative Draft Action Plans	RTPCs
March/July 2013	MTC Releases Draft/Final 2013 RTP, including the SCS	MTC
September 2013	Issue Draft Action Plans	RTPCs
December 2014	Issue Draft CTP/EIR	CCTA
May 2014	Adopt Final CTP	CCTA
June-July 2014	RTPCs adopt Final Action Plans	RTPCs

Sustainability

There is increased interest nationally and regionally, even globally, in incorporating sustainability into transportation planning and in using a broader range of performance measures and evaluation criteria to understand how sustainable our plans, programs, and projects are. (See the NCHRP report, Smart Mobility Framework, STARS, etc. for examples.)

The current CTP includes an implementation action to initiate a study on sustainability and consider how the Authority might address it within the context of Measure J. A discussion paper has been prepared on whether and how to incorporate sustainability into CCTA planning and programs. This paper intends to initiate a dialogue at the regional and countywide scale. We want to know what you think the Authority's role should be to ensure transportation sustainability.

RTPC Role Review the discussion paper when provided, forward comments and recommendations to the CTP Task Force

State and Regional Context of the CTP/Action Plan Updates

Recent changes in State legislation and regional planning will affect how we plan for and fund the operation, maintenance and improvement of the transportation system. The updates of the CTP and the Action Plans will need to respond to these changes.

- SB 375 and AB 32, the State's greenhouse gas (GHG) reduction legislation, require the State, regional transportation agencies, and localities to reduce GHG emissions to 1990 levels by the year 2020. While CCTA is not directly subject to the legislation, regional transportation funding strategies and Contra Costa jurisdictions will need to respond.

- AB 1358, the Complete Streets Act of 2008, requires jurisdictions to adopt a circulation element that accommodates all users, including bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, public transportation, and seniors. MTC policy is being changed to require localities to adopt a Complete Streets resolution or update their Circulation Element to reflect AB 1358 to receive certain regional funds.

- Plan Bay Area is the name for MTC's forthcoming Regional Transportation Plan (RTP) update, which will be released while the CTP Update is underway. The RTP will be integrated with a proposed pattern of land use development, known as a Sustainable Communities Strategy (SCS), required by SB 375. The combined RTP/SCS must reduce regional GHG emissions from cars and light trucks to hit State-mandated targets for the years 2020 and 2035. Plan Bay Area will likely use transportation investments and grants to encourage the majority of future housing development and jobs placement to be sited within locally-identified Priority Development Areas (PDAs).

- A new Regional Housing Needs Allocation (RHNA) will be released by ABAG soon. The RHNA will be aligned with the RTP/SCS to reflect its desired land use pattern, and so may have significant differences from past RHNAs.

RTPC Role Understand the direction provided by these State and regional policies and what related changes to the CTP and Action Plans may be warranted

Identification of Projects

DEVELOPING A COMPREHENSIVE LIST OF PROJECTS

Essential to developing an up-to-date and accurate plan will be an up-to-date and accurate list of projects and programs. To develop both the 2014 CTP and the

2013 Congestion Management Program (CMP) — as well as many other planning efforts — we will need local agency help in updating the CTPL. The CTPL is the “master” project list. It is built on the Action Plans and local agency capital improvement programs and is used to develop the CMP, the STIP, Plan Bay Area and other plans. Unlike the project list for the RTP, which must assume the limitations of expected funding, the CTPL is financially unconstrained.

THE 2013 CMP UPDATE

As a congestion management agency, the Authority must prepare and update its CMP, which includes a seven-year capital program of projects to maintain or improve the performance of the system or mitigate the regional impacts of land use projects. The State Transportation Improvement Program (STIP) is the five-year plan adopted by the California Transportation Commission (CTC) to allocate funds for state highway improvements, intercity rail, and regional highway and transit improvements. Both the CMP and STIP project lists must be updated every two years. The current CMP is from 2011; the current STIP was updated in 2012 but an updated project list must be submitted to the CTC in 2013.

Given the inter-related nature of these project lists, it is most efficient to ask for all projects at once. The CMP and CTP have compiled project lists through the Authority’s web-based CTPL. This tool again has the potential for helping on setting priorities efficiently for the next CTP and RTP and serves as a resource in discussing a possible Measure J renewal/extension.

***RTPC Role** Begin compiling transportation projects desired for the region, noting cost estimates and whether the project applies to the CMP or STIP lists*

CYCLE 2 FEDERAL FUNDING

As part of the RTP update process, MTC is calling on transportation agencies in the region’s counties to provide requests for “Cycle 2” federal funding. The following MTC programs will be funded through this method:

- OBAG program (\$45.2 million) – call for projects in early March

- Safe Routes to School program (\$3.3 million) – call for projects in early March
- PDA Planning Program (\$2.8 million) – call for project following adoption of PDA Investment and Growth Strategy

RTPC Role *Be prepared to provide desired projects and cost estimates for these competitive programs*

2013 STRATEGIC PLAN FOR MEASURE J

The current Strategic Plan was completed in 2011 and the Plan will be updated again in 2013. This update will need to re-assess long-range estimates of sales tax revenues under Measure J, make adjustments to its guiding policies, and make financial commitments to individual projects. This program of projects is the basis for evaluating requests for fund appropriations, which may not exceed those listed in the program. Measure J funds are limited so project proponents are expected to apply for all available funds from other sources to maximize the “leveraging” of Measure funds.

Following the adoption of the estimates of funding for the Strategic Plan, the Authority will also begin the process for programming for two Measure J programs: Transportation for Livable Communities (Program 12) and Pedestrian, Bicycle and Trail Facilities (Program 13).

RTPC Role *Consider which projects proposed in the CTPL may be eligible and appropriate for Measure J funding*

2013 STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

The State Transportation Improvement Program (STIP) is the biennial five-year plan adopted by the Commission for future allocations of certain state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements. It parallels the federal Transportation Improvement Program, or TIP, which programs federal transportation funds.

RTPC Role *Consider which projects proposed in the CTPL may be eligible and appropriate for STIP funding*

Proposed Schedule

<i>Date</i>	<i>Action</i>	<i>Responsible Part</i>
January – June 2013	CTPL database open for update	Local jurisdictions
March – June 2013	OBAG & SR2S “Call for Projects”	CCTA / local jurisdictions
June 2013	Release Draft 2013 CMP	CCTA
May – October 2013	PDA Planning Program	CCTA / local jurisdictions
April– September 2013	Measure J Strategic Plan Update	CCTA / RTPCs / local jurisdictions
November 2013	Adopt 2013 CMP	CCTA
July – December 2013	STIP “Call for Projects”	CCTA
2014 (Tentative)	Second Measure J CC-TLC and PBTF “Call for Projects”	CCTA / RTPCs / local jurisdictions

Public Outreach

The Authority has selected a consultant team, led by Gray-Bowen, to work with staff and the CTP Task Force on countywide public outreach. The consultant will work on explaining the 2014 CTP Update and listening to the public to help update the CTP goals and identify a financially-constrained project list. The outreach process will include focus groups, a survey, stakeholder interviews, and public workshops.

The Gray-Bowen team will also work with the Action Plan consultants (the DKS team) to undertake public outreach at a sub-regional level. The Authority staff will be working with both consultants and the RTPCs to determine how to integrate these public outreach efforts with one another and the overall CTP Update schedule.

RTPC Role Pending schedule and outreach strategy

Discussion Paper:

Incorporating Sustainability into the 2014 Countywide Transportation Plan

December 26, 2012

Executive Summary

The purpose of this paper is to frame issues and questions about whether to make “sustainable transportation” an explicit planning concept in the 2014 Countywide Comprehensive Transportation Plan (CTP) and what implementing sustainability in this context would mean for the Contra Costa Transportation Authority (the Authority) and local jurisdictions. This initiative responds to one of the implementation actions in the 2009 CTP calling for an investigation of the role for the Authority in addressing sustainability in the context of Measure J (*see 2009 CTP Update, Table 3, page 120*) as well as State legislation on sustainability (SB 375) and related efforts by the Metropolitan Transportation Commission (MTC) and other agencies on this topic.

The basic idea would be to incorporate and showcase sustainability as an additional component of the Authority’s practical, operational approach to transportation planning—to maximize efficiency, use limited resources well, and deliver effective services to the county’s residents, businesses, and visitors—strategies which by their very nature incorporate sustainable elements.

This paper reviews definitions of sustainability, the current implementation of sustainable practices by the Authority, where further policy guidance would be helpful, reasons for and against a sustainability planning policy, and options for including sustainability in the CTP. Attached are exhibits including highlights about what peer agencies are doing to further the idea of achieving a sustainable transportation system, some other widely adopted approaches across the US and locally, and suggestions for specific strategies and programs that the Authority could consider.

From managing growth, to supporting mobility, to responding to the diverse needs of communities in Contra Costa, the Authority has made significant inroads towards achieving a number of objectives related to sustainability. Consequently, the proposals suggested in this discussion paper are not radical departures from existing Authority policies. Rather, they are refinements to and a reframing of policies that the Authority has already set, policies that are already focused on meeting the needs of the present without compromising the ability of future generations to meet their own needs.

I. Sustainability and the Authority

In many ways, sustainability is consistent with the Authority's approach to its mission. The Authority and its member jurisdictions already exercise sustainable practices in ways that are effective and generally uncontroversial. The following discussion begins with a definition of sustainability, and then provides examples of how the concept of sustainability is in many respects already integrated with the Authority's mission, goals, projects, and programs.

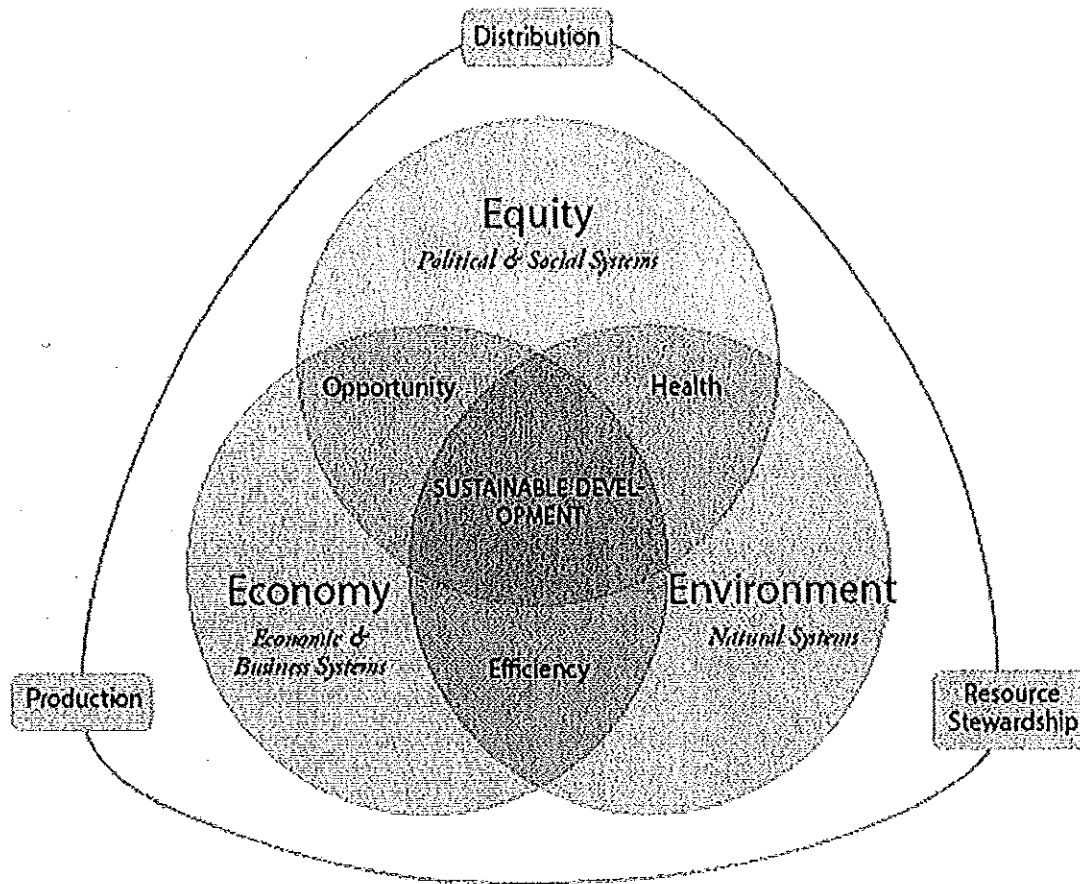
DEFINITIONS OF SUSTAINABILITY

There are many definitions of sustainability, but they all share a basic idea. The definition from the American Planning Association states it as follows:

Sustainability is the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs by preserving and protecting the area's ecosystems and natural resources.

In other terms, sustainability is not an environmental concern *per se*, but is about ultimate outcomes within a constrained world, whether related to money, air quality, water supply, public health and livability, or land. A common mechanism of sustainability is ensuring that actors mitigate or bear the impacts of their actions, and ensure that the impacts on others are not significant. As a result, sustainability may require greater short-term investments in order to reduce long-term costs, the imposition of fiscal constraints, and open planning processes to share the costs and benefits of actions with potentially impacted communities.

Discussions about sustainability commonly link sustainability to achieve three overarching goals, known as the "three Es": economy, environment and equity. In the Bay Area, MTC's current *Regional Transportation Plan*, T-2035, and its proposed successor, *Plan Bay Area*, are guided by these goals: build a stronger *economy*, protect the natural *environment*, and *equitably* enhance opportunities for Bay Area residents from all walks of life. In other jurisdictions, variations on this vision have replaced the third component with "equity and social justice" (to bring in the question of who benefits and how are costs distributed) or "social and human health" (to reflect the idea that people and their communities matter as well as the economy and the environment). Whatever specific terms are used, these three concepts overlap, meaning that programs may cut across and reinforce all three principles as part of a sustainability initiative. The figure on the following page illustrates the interactions.



AUTHORITY OBJECTIVES AND SUSTAINABILITY

These common definitions of sustainability are consistent with the Authority's current mission to, "Deliver a comprehensive transportation system that enhances mobility and accessibility, while promoting a healthy environment and strong economy by:

- Leading a collaborative decision-making process with local, regional and state agencies;
- Establishing partnerships to effectively deliver transportation projects and programs;
- Facilitating a countywide dialog on growth and congestion that discloses and seeks to mitigate the impacts of development while respecting the responsibilities of local jurisdictions;
- Taking into account the diverse character of Contra Costa communities."

Following this mission, the adopted goals and implementing strategies in the first CTP in 1995 embodied many sustainability concepts and have been carried forward through all subsequent plans, as seen in the four goals from the 2009 CTP:

- Enhance the movement of people and goods on highways and arterial roads;
- Manage the impacts of growth to sustain Contra Costa's economy and preserve its environment;
- Provide and expand safe, convenient and affordable alternatives to the single-occupant vehicle; and
- Maintain the transportation system.

At a more tactical level, the plans, strategies and performance measures in the Measure J Expenditure Plan, the Growth Management Program (GMP), and the current CTP embrace the essence of common sustainability principles by managing growth and trying to ensure transportation options for all county residents. Specific examples of "sustainable" projects and programs include carpool lane extensions/gap closures, the Transportation for Livable Communities (TLC) program, the urban limit line (ULL) balanced with housing and job opportunities, and the Measure J requirement that access for pedestrians, bicyclists, and transit is supported in new development.

II. Where Policy Guidance is Needed

The pursuit of sustainability may, however, be inconsistent with other Authority policies or historical practices. It is these areas for which policy direction is needed.

Some sustainability practices may simply be new policies which create an additional approach or action. One example of such a situation would be a construction waste management program, a common sustainability measure, which would impose a new requirement on road contractors and may increase bid costs and thereby delay some and possibly eliminate other projects. However, the program would likely not conflict with other Authority policies and programs. Such strategies may need little to no policy guidance apart from the existing Authority mission and CTP goals.

Certain sustainable practices may conflict with other components of the Authority's mission, however. The Alameda County Transportation Commission issued a

whitepaper on sustainability¹ in April 2011 that noted some of these inherent conflicts for a Congestion Management Agency, including:

- *Trading off equity and environmental protection.* Some definitions of sustainability include both environmental protection and preservation of social and geographic equity. These aspects of sustainability do not always work in harmony, such as when equitable distribution of transportation funds among local governments conflicts with a desire to maximize the greenhouse gas reduction and air quality improvement benefits of specific types of transportation projects (particularly transit investments).
- *Trading off mobility and energy/GHG reduction.* Strategies to reduce VMT pursue environmental sustainability by reducing air pollution and greenhouse gas emissions, but can negatively impact economic growth and personal mobility by making travel of people and goods expensive or inconvenient. This would directly clash with the current CTP goal of enhancing the movement of people and goods on highways and arterial roads.
- Exhibit 1 contains more issues from the ACTC whitepaper and proposed responses to these situations.

In addition, certain types of sustainability could conflict with other types. The pursuit of operational sustainability—ensuring that transportation systems can function under duress—may require investments that clash with a view of sustainability being primarily fiscal in nature—with a goal of reducing construction, operation, and maintenance costs.

III. Options Available to the Authority

As part of the CTP update, the Authority should consider whether to implement a Sustainability Planning Policy across the full range of responsibilities it exercises. The various bodies that make up the Authority—the Board, RTPCs, staff, and others—should first discuss and decide whether to pursue such a policy, and if there is a decision to include sustainability, then determine how to include it in the 2014 CTP.

WHETHER TO HAVE A SUSTAINABILITY PLANNING POLICY

This section presents pros and cons for incorporating sustainability into the 2014 CTP. There are several reasons why the Authority should consider a systemwide sustainability planning policy.

¹ http://www.alamedactc.org/files/managed/Document/2416/05a_Sustainability_Principles.pdf

- While the objectives and many programs of the Authority are inherently sustainable, an explicit sustainability policy would establish a framework for the Authority to more fully integrate sustainability into the Authority's planning and funding functions; support local actions that will complement these efforts; and foster collaboration and facilitate partnerships that will lead to more sustainable transportation and sustainable urban development.
- The Authority and local jurisdictions are in a position of leadership on sustainability. While the Authority does not operate roads or transit systems, it provides critically needed funding for them. Through its engagement with local and regional partners leveraging \$2 billion in sales tax revenues for transportation projects and program improvements in Contra Costa, the Authority can both understand the local conditions in each jurisdiction, and take a broader, regional perspective.
- This policy would demonstrate the Authority's commitment to sustainability as a core value and as a strategy for enhancing the quality, efficiency, and value of the transportation system for Contra Costa. It would help leverage and highlight the collective benefits of efforts underway to achieve a more sustainable countywide transportation system including, but not limited to, implementation of Measure J programs and projects; implementation of the Congestion Management Program; and partnerships with regional agencies and local jurisdictions.
- A high profile sustainability policy would help organize and elevate the profile of the Authority's existing sustainable programs. By deliberately noting which of its existing policies and actions promote sustainability, the Authority can better plan how to enhance and build upon those approaches while helping identify those programs which may be unsustainable in some way. By highlighting its existing and continued commitment to sustainability, the Authority may also set the stage for future support for additional transportation measures in Contra Costa.
- This policy would broaden the Authority's focus on individual projects and programs to a larger, system-based framework for sustainability analysis and planning that would assist local jurisdictions to make the best use of Measure J funding, along with MTC One Bay Area Grants, for a sustainable transportation system. It would introduce new dimensions to traditional transportation planning, consistent with the Authority's leadership in transportation modeling and growth management and the State's and MTC's calls for implementation of "Complete Streets" on which the Authority will be acting shortly. It also would embody substantive elements of the Sustainable Communities planning strategies called for by SB 375. These new considerations would move beyond

the earlier emphasis in transportation planning on traffic congestion toward a more multi-dimensional approach, as envisioned by Measure J.

In contrast, there are some reasons to consider staying with the status quo, with the Authority essentially but not explicitly pursuing sustainability.

- Executing its existing voter-approved mission should be the main emphasis for the Authority. Sustainable programs and policies are fine so long as they serve that mission, but a countywide policy may distract from the Authority's core functions.
- A sustainability policy may need to choose between competing definitions of sustainability, a significant endeavor which may be beyond the CTP update process. Similarly, unless carefully crafted, a blanket sustainability policy may require changes in currently popular or effective Authority programs.
- A countywide approach to sustainability may not be appropriate. A policy or program that works well in one location or for a large project may not apply elsewhere. Local or sub-regional level sustainability policies may be more appropriate.
- The Authority already effectively pursues sustainability and adding a new policy may be cumbersome and counter-productive. In particular, adding more requirements and paperwork to funding opportunities could frustrate local jurisdictions and reduce their flexibility in choosing how to spend money to maintain and enhance basic transportation infrastructure.
- The popular perception of sustainability as emphasizing environmental and ecological conservation may conflict with an approach that focuses on operations and lifecycle costs. This confusion could be avoided by not actively pursuing "sustainability" but rather adhering to the Authority's existing mission.
- The Authority already effectively pursues sustainability in a manner that meets its mission and goals. Spending time and energy on a sustainability planning policy is not an effective use of resources during the CTP update process.

HOW TO INCLUDE SUSTAINABILITY IN THE CTP

If the Authority decides to include sustainability in the 2014 CTP, it needs to determine how to do so. This section includes several suggestions on approach. These options are neither mutually exclusive nor an unbreakable bundle, so the CTP could include one or more tactics.

Add sustainability to the vision and goals

One action to incorporate sustainability into the Authority's plans and policies would be updating the Authority's vision in the CTP Update. One wording option would be minimal (addition underlined):

Strive to preserve and enhance the quality of life of local communities by promoting a healthy environment and strong economy to benefit the people and areas of Contra Costa, through (1) a balanced, safe, sustainable and efficient transportation network, (2) cooperative planning, and (3) growth management.

An additional or alternative expression of this vision that is more substantive could be:

The Authority will work with its local and regional partners to deliver a comprehensive transportation system that is sustainable and that, in turn, promotes economic vitality, environmental health and quality of life for all the communities of Contra Costa.

The next question that arises is, if either of the above changes are made to the vision, what changes, if any, should be made to the goals. An effective sustainability goal would adhere to the message of sustainability as it relates to the details of the Authority's mission. Consistent with either of the expanded visions suggested above, the fourth goal of the 2009 CTP ("Maintain the transportation system") lends itself to refinement for the 2014 CTP as follows:

- Maintain a transportation system that fosters walkable and livable communities, conserves energy and minimizes greenhouse gas emissions and adverse environmental impacts.

Add sustainability to all or some functions of the Authority

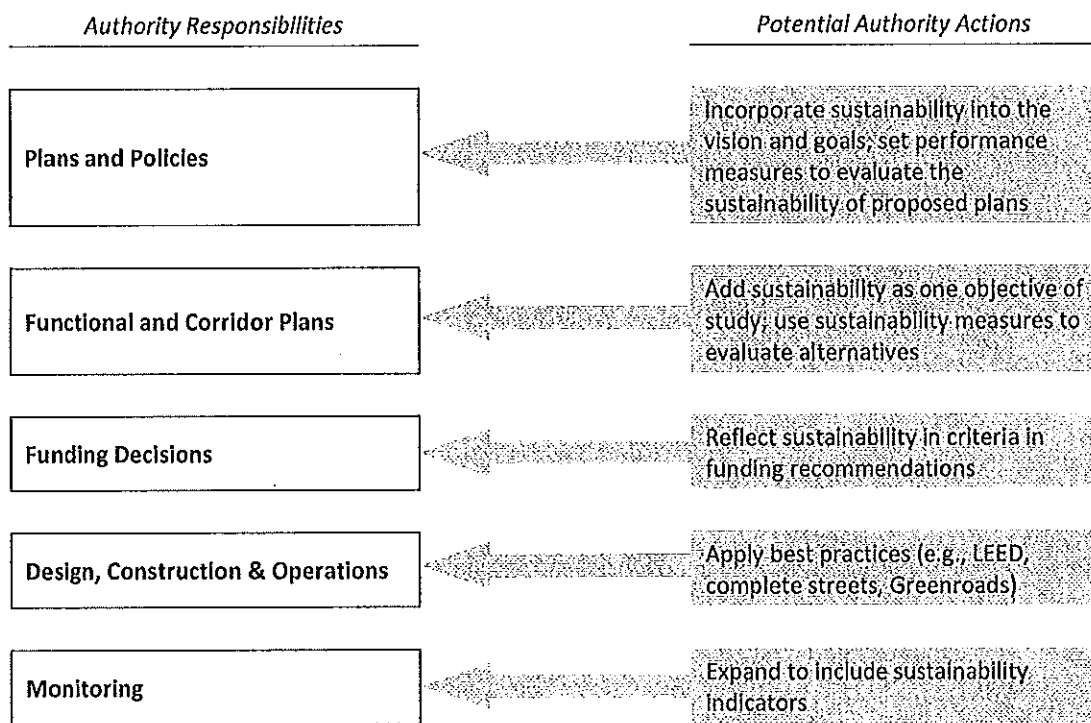
The *National Cooperative Highway Research Program Guidebook*² describes how sustainability can be incorporated into the different points in the project development process (see Exhibit 2 for the NCHRP's list of sustainability goals for transportation agencies). The first such point in the planning process is long-range transportation planning—analogueous to the Authority's CTP:

Long-range planning is a point at which expectations for sustainability performance can be discussed— particularly in terms of desired sustainability

² "A Guidebook for Sustainability Performance Measurement for Transportation Agencies" (NCHRP 708)

outcomes—and broad performance goals established that drive subsequent investment patterns.

An agency can also incorporate sustainability into the other, later planning stages (short-range transportation programming; project-level planning; project-level environmental review; design, land acquisition and permitting; and construction, maintenance and operations) but the sustainability approach and objectives should all flow from the decisions made at the long-range planning stage. The below diagram demonstrates the layers and scales of Authority responsibilities and how sustainability could be integrated into each:



If the Authority adds sustainability to its plans and policies, it might then ripple through each of the layers below.

Pursue sustainability through the Authority’s general Measure J mission

There are three inter-related strategies that could enhance sustainability while supporting the Authority’s mission as defined by Measure J:

- *Operational sustainability.* Ensure that transportation systems can function under duress or during and following an earthquake or other natural or man-

made disaster. Also known as *resiliency*, this strategy may incorporate redundancy, modularity, diversity of systems, feedback collection, and adaptability. The damages wrought by Superstorm Sandy and the potential impacts of sea level rise illustrate the importance of operational sustainability. The redundant systems resulting from this strategy, however, may be in tension with other goals, such as efficiency and fiscal sustainability.

- *Fiscal sustainability.* Ensure that the lifecycle costs of the transportation system are affordable over the long-term. The cost of not just designing and building a transportation investment, but also operating and maintaining it, should be budgeted and controlled. The Authority should adopt and operate under a financially-constrained long-term budget that incorporates all O&M costs and also replacement costs—a true “life-cycle” perspective. This strategy might, however, result in unequal service to some communities because of the difference between marginal cost and revenue.
- *Social health and political sustainability.* The transportation system and its planning process needs to maintain support from all those who rely on it and provide it with funds. The transportation system should not disproportionately impact disadvantaged groups or areas or on other systems, either directly (destroying biological habitat, disrupting residential areas, limiting access for those with disabilities) or indirectly (encouraging inefficient transportation or land use patterns, creating unhealthy levels of air pollution, or generating damaging amounts of greenhouse gas emissions).

The CTP could select one or more of these strategies and tie it to Measure J fund distribution. Since Measure J does not explicitly refer to “sustainability”, the Authority is free to pursue sustainability in a manner that serves its mission while adhering to Measure J.

Adopt one or more over-arching programs as part of the CTP

Four over-arching programs are suggested for discussion as part of the CTP update. These programs focus on directing how the CTP is implemented, rather than on the details of individual projects or the high level of vision and goals. These programs can be tailored to the needs of individual areas through the Action Plan updates.

- *“Green” modes:* Support and promote “green” mobility options to reduce air pollutants, conserve energy, lessen dependence on imported oil, increase the resilience of the transportation system, and offer transportation options that enhance community health. These would include not only transit, biking and walking, but also continued support for safe routes to schools programs,

wayfinding signage, greater use of EV vehicles and alternative fuels for transit, trucks and personal use, EV "readiness" policies in new development and major redevelopment, and use of clean/green technologies for goods movement, including supporting advancements of zero-emissions truck technologies. Any travel mode, especially electric vehicles, should be evaluated for its ultimate lifecycle costs before being pushed as "green" by the Authority.

- *Resource conservation.* Support transportation programs and projects that minimize material and resource use through conservation, reuse, recycling and repurposing. This could be done by incentives, funding criteria, and construction and operations requirements. "Lifecycle" costing also may help project proponents understand the economics of tradeoffs. BART, for example, is embarking on a small-scale solar energy project at the Lafayette and Orinda BART stations. These projects will provide canopies above particular areas of the parking lots at these stations and the energy generated would supply energy to the stations. BART also constructed solar projects at several maintenance shops and is hoping to retrofit the lighting at stations, shops, yards, parking lots, garages and tunnels with LEDs, greatly reducing its energy needs.
- *Healthy communities.* Improve public health through local land use planning, traffic safety, designs for walkable and bikeable communities, and reduced exposure to particulates and diesel emissions from rail and freight movement in transportation corridors, and through support for alternative fuels and clean engines. Tradeoffs will need to be weighed as public health objectives do not always mesh neatly with transportation objectives. For example, increasing density in transportation corridors may also increase exposure to toxic air contaminants, such as diesel particulate matter. Whether to establish Air Quality Health Risk Overlay Zones along freeway corridors to protect sensitive receptors (children, elderly and those with preexisting serious health problems) is an option that might be considered in the Action Plan updates. The City of San Pablo included such a policy in its recent General Plan update in response to concerns raised by the Bay Area Air Quality Management District.
- *Healthy ecosystems.* Enhance and restore creeks, wetlands, habitat and other natural systems to mitigate the impacts of transportation projects on the natural environment. Reduce storm runoff from transportation facilities through greater surface permeability and use of retention ponds and bioswales. Where flooding is an issue, and downstream facilities have limited capacity, this approach makes good sense.

Provide tools to analyze sustainability opportunities

Similar to a performance measure, the Authority could provide project sponsors with tools to conduct their own analysis of sustainability opportunities. This would then provide an opportunity for sponsors to become aware of and incorporate design and operational strategies that enhance project sustainability. Completing a sustainability checklist, undergoing a sustainability audit, or some other mechanism could be designed to emphasize an educational approach that improves the understanding and acceptance of sustainability without imposing requirements. It could also be designed as an approach that emphasizes local control and responsibility but still expects results, somewhat like the Measure J compliance checklist.

Exhibit 3 lists some practical strategies and programs that the Authority and the RTPCs could consider including in such a tool. Examples of such programs that would improve sustainability include, but are not limited to, facilitating implementation of Intelligent Transportation Systems (ITS) on regional routes, greater use of alternative fuels and electric cars (e.g., expanding funding for charging stations, preferential parking, etc.), use of automated cars as recently authorized by State legislation, real-time ridesharing, and greater support for transit, bicycling, and pedestrian linkages. Feedback from the RTPCs and stakeholders and technical work on the CTP and Action Plan updates will inform details on how far to go with these new initiatives.

Incorporate sustainability into systemwide performance measures

Performance measures are one approach to evaluating the effectiveness of a transportation system against sustainability. The Sustainable Transportation Analysis & Rating System (STARS) is one large scale national approach, while MTC is using performance measures to evaluate which transportation projects to support in its forthcoming Regional Transportation Plan update. The Authority has experience using performance measures, applying them in the 2004 CTP Update's EIR process as the criteria of significance to evaluate three alternative plans and develop the final adopted CTP and proposed renewal of Measure C. Besides the more traditional measures of vehicle miles traveled, vehicle hours of delay and mode split, the criteria of significance used in the EIR addressed air quality, water quality, land use changes and other measures that, at least partially, address sustainability.

In addition, the CTP already incorporates the MTSOs adopted in the four Action Plans for Routes of Regional Significance as performance measures used by the Regional Transportation Planning Committees (RTPCs) and the Authority to evaluate the functioning of the transportation system and the impacts of growth. The MTSOs required by Measure J can be used as a starting point in developing systemwide performance measures in a new sustainability approach for the 2014 CTP.

This approach would build on existing frameworks employed by the Authority, the RTPCs, and at a regional level by MTC in the forthcoming Plan Bay Area RTP/SCS. Plan Bay Area's transportation and land use direction will set forth the preferred Sustainable Communities Strategy for the entire Bay Area at a regional level. Countywide and local programs that further Plan Bay Area are assured to be *de facto* sustainable and would better align with funding from the OneBayArea Grant Program. Whatever long-range direction is selected would subsequently guide the Action Plan updates and decisions on funding, construction, and operations.

With performance measures, however, the Authority would need to decide their role in project evaluation. One option is that the measures could be incorporated into the project scoring process and serve as one of many factors in determining which ones to fund and how they should be designed and operated. An alternative option is that the measures would determine if a project met a minimum threshold of sustainability that must be achieved, albeit possibly to the detriment of other objectives or goals. This could be a total score, with alternate routes to achieving compliance, or a pre-requisite system that has basic requirements. For the creation of Plan Bay Area, MTC is using performance measures as a major filtering mechanism by evaluating transportation projects against two scales—performance measures and cost/benefit—with the opportunity for project sponsors to appeal for a project to be considered on other merits.

Regardless of the specific approach taken, the kinds of performance measures the Authority will use for a countywide or systemwide evaluation may not be the same as the kinds of measures used at the corridor level. For example, measures like “relative change in transportation cost index” or “percent of annual transportation funding needs that can be met with annual revenues” may not work at the corridor level, whereas a measure such as “change in multimodal LOS due to the project” may be more applicable at the corridor level. For this reason, the measures used to evaluate the CTP would likely be distinct from those used in the Action Plan update process. In addition, given the differences among the subregions in Contra Costa, the MISOs developed by one RTPC may differ from those in the other regions. The 2014 CTP would likely outline a hierarchy of measures that get more detailed as the scale of application grows smaller. Within the framework of the CTP's adopted goals and strategies, the choice of corridor-level measures would be left up to each RTPC.

A third option would be to ask project applicants to forecast performance, but not explicitly include it as a factor in scoring the projects. With this approach, we could learn from our experience in attempting to measure sustainability, and consider applying it in future funding cycles.

IV. Next Steps

The Planning Committee should review this discussion paper and suggest refinements before circulating it to the RTPCs. The RTPCs should then review and provide their input to Authority staff on the questions raised in Section III above:

1. Should a sustainability planning policy be incorporated into the CTP?
2. If yes, how should that policy be included, in light of the suggestions in this paper or other options?

V. Attachments

The following attachments review widely adopted approaches to sustainability, program examples and thinking from other congestion management agencies in California, and an additional set of potential sustainable programs and strategies for THE AUTHORITY to consider in its operational practices.

EXHIBIT 1: EXAMPLES FROM CONGESTION MANAGEMENT AGENCIES

This section outlines strategic and programmatic sustainability initiatives from three other transportation authorities in California: ACTC, VTA, and MTA.

Alameda County Transportation Commission

Another Bay Area CMA, the Alameda County Transportation Commission, has not put a sustainability program into place, but did issue a whitepaper on sustainability (including an overview of case studies and an assessment of challenges, repeated here:

From http://www.alamedactc.org/files/managed/Document/2416/05a_Sustainability_Principles.pdf

Additional challenges for Alameda County include:

- *Integrating land use and transportation planning.* SB 375 is intended to encourage integration of land use development with transportation investments to reduce vehicle miles traveled and greenhouse gases. However, land use planning cycles are out of sync with transportation planning cycles, and the authority for land use and transportation planning decisions resides in separate agencies. Coordinating these is an ongoing challenge for the CWTP and beyond.
- *Trading off equity and environmental protection.* Some definitions of sustainability include both environmental protection (e.g. greenhouse gas reduction and air quality improvement) and preservation of social and geographic equity. These aspects of sustainability do not always work in harmony. The goal of achieving equitable distribution of funds among local governments in Alameda County may conflict at times with a desire to maximize the greenhouse gas reduction and air quality improvement benefits of specific types of transportation projects (particularly transit investments). This could be addressed in part by ensuring that overall investments among communities are balanced, but that investments are appropriate for each community. For example, in the context of a low-density community, signal timing improvements or incentivizing carpooling are likely to yield more cost-effective reductions in greenhouse gases than is expanding transit service.

- *Trading off mobility and energy/GHG reduction.* While reducing VMT clearly supports environmental sustainability, there is disagreement over the extent to which VMT can be reduced without negatively impacting economic growth and personal mobility. The challenge is to develop land use and transportation systems that maximize the accessibility of people and businesses to jobs, workforce, goods, services, and markets (i.e., the opportunities that can be reached within a given travel time) – while minimizing the distances that must be traveled. This can be done through compact, balanced, and mixed-use land use patterns that allow shorter trips and increase connectivity within neighborhoods, combined with improved transit, bicycle, and pedestrian infrastructure. Pricing strategies can also ensure that the capacity of the transportation system is used most efficiently to support economic growth.
- *Meeting LOS/congestion standards vs. reducing VMT.* Closely tied in with the previous issue is the question of how traffic impacts associated with new development are mitigated. California has long had in place requirements for county-level congestion management systems to meet level of service (LOS) standards as well as requirements in California Environmental Quality Act (CEQA) review to evaluate whether projects would result in exceedance of LOS standards. However, these requirements provide incentives for capacity expansion (as a mitigation measure), rather than VMT reduction. Recognizing the potential conflict with state GHG reduction policies, the state recently issued new CEQA guidelines that shift the emphasis away from LOS and congestion standards and allow communities to set alternative goals such as trip and VMT reduction. It is not yet clear what effects this change will have on sustainability outcomes, including infrastructure supply as well as travel demand.
- *Expanding the scope of transportation planning activities beyond traditional infrastructure investment.* Creative response to climate change and fiscal challenges may require re-definition of the scope of transportation planning. Many innovative and promising strategies to reduce greenhouse gas impacts may require thinking beyond concrete and paint to include planning for new technologies and programs such as electric vehicles, dynamic ridesharing, and smart parking management.

Santa Clara Valley Transportation Authority (VTA)

VTA has adopted a mission statement, goal, and set of six strategies for its sustainability program, and signed the American Public Transportation Association's Sustainability Commitment.

Goal: To proactively reduce the consumption of natural resources, the creation of greenhouse gases, and the generation of pollution in the provision of public transportation services.

Strategies:

1. Develop and implement public educational programs that promote the environmental benefits of public transit.
2. Support sustainable, transit-oriented development along major transit corridors to maximize the use of VTA's buses and light rail system as environmentally friendly alternative to the single-occupant automobile.
3. Evaluate the sustainability of VTA's existing facilities. Implement cost-effective sustainable maintenance and operational measures that recognizes life-cycle returns on investments from the efficient use of energy, the reduction of waste, and the conservation of natural resources.
4. Incorporate sustainability and green building principles and practices in the planning, design, construction and operation of new VTA facilities.
5. Develop procurement strategies that incorporate sustainability criteria compatible with federal and state regulations.
6. Establish benchmarks to measure the progress and performance of VTA's sustainability program and report back to the VTA Board of Directors on an annual basis. Among other actions, this report will involve reassessing VTA's fuel, electrical, and water usage on a regular basis.

VTA has committed to annual reports on its sustainability performance against established benchmarks in order to monitor the cost and resource savings since the adoption of the Sustainability Program.

Sustainability programs undertaken by VTA are organized around resources (energy, water, air, and land) and include:

- Solar energy structures in VTA parking lots, which generate energy while shielding vehicles from the sun
- Retrofitting its administration buildings and facilities with energy efficient lighting, computer and office equipment

- Testing LED lighting at parking lots and station platforms (pilot project)
- Turning off auxiliary power systems to parked light rail vehicles and reducing the number of cars per train
- Utilizing recycled water in bus washers
- Replacing older toilets and faucets with more efficient models and installing weather based irrigation controllers, allowing maintenance staff to monitor changes remotely through a web based interface and to respond quickly and accurately to leaks
- Adopting Sustainable Landscape Guidelines
- Replacing gas-powered paratransit and non-revenue vehicles with hybrids and replacing older buses with diesel electric hybrid buses
- Working with local jurisdictions to promote bicycle and pedestrian facilities and improve infrastructure, such as adding bike lockers and racks to Park & Ride lots and transit centers
- Set goals to reduce greenhouse gas emissions

Los Angeles Metropolitan Transportation Authority (LA Metro)

LA Metro, which is a CMA as well as a transit agency, has an extensive sustainability program in place, based around their "Environment" program. This program is organized around a goal statement and 3 P's (instead of E's):

- People (Engage in fair and beneficial business practices toward labor, communities and the Greater Los Angeles region.)
- Planet (Identify, incorporate and encourage sustainable environmental practices.)
- Profit (Benefit the region through responsible stewardship of public transportation planning and implementation.)

LA Metro's website is straight-forward and well organized, with all of its sustainability initiatives available from its Environment homepage:

<http://www.metro.net/projects/metro-environmental/>

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LA Metro has focused on research and high-level strategies rather than discrete programs. These plans include:

- A sustainability implementation plan to cover 2008-2012, a 2012 evaluation of efforts to date, and a (currently draft) Countywide Sustainability Planning Policy that updates it and moves forward.
- A baseline sustainability study (June 2009) that briefly covered multiple issues (ridership, fuel use, electricity use, water use, air quality, waste, etc.) with an evaluation and recommendations, and made suggestions for further advancing sustainability.
- A Climate Action Plan which establishes a GHG emissions inventory for LA Metro as well as an evaluation of strategies for reduction.
- A series of plans that focus on individual aspects of sustainability: Water Action Plan, Energy Conservation and Management Plan, and GHG Emissions Cost Effectiveness Strategy
- A series of very short policy summaries (from one to five pages) spelling out LA Metro's immediate and long-term objectives on sustainability, the environment, energy, construction and demolition debris recycling and reuse, green construction, and waste.

Actual sustainability programs implemented by LA Metro are organized around clean air/GHG reduction, energy, and support of cooperative regional programs. These include:

- Commuter/Employer Programs to promote use of transit through pass and vanpool subsidies
- Emission Reduction Efforts, such as CNG vehicles
- Clean Air Task Force
- Energy Efficient and Sustainable Buildings—committing to design and build structures to meet or exceed the LEED Silver rating
- Installation of Additional Solar Panels in various Metro facilities to relieve reliance on supported electrical power

- Recycling and Reuse Policy to consider in all aspects of Planning, Construction, Operations, Procurement the reuse and recycling of materials in Metro and Metro-funded construction projects
- Sustainability Design Guidelines that will incorporate sustainability elements, such as low impact development, recycled material usage, drought tolerant landscaping, reclaimed water use, etc.
- Sustainability Management System (SMS) Pilot Study, incorporating the ISO 9001 (Quality), 14001 (Environment), and OHSAS 18001 (Safety) standards to create a sustainable environment within the agency.
- ADA Compliance Coordination, ensuring compliance of sustainability projects with American with Disabilities Act requirements.
- Procurement and Material Management Coordination to influence sustainability efforts throughout the region through leverage of procurement practices

EXHIBIT 2: OTHER WIDELY ADOPTED APPROACHES

National and local systems for incorporating sustainability into transportation projects are briefly reviewed below. The intent of all of these systems is first, to consider the full range of impacts and concerns affecting transportation and its role, and second, to make the balancing among alternative choices more explicit. In these systems, the concerns go beyond the more traditional concerns of accessibility and mobility to cover safety, economic vitality, resource consumption, air quality, and resilience. And by using quantitative measures to assess how well plans and projects do in addressing these concerns, these systems of evaluating sustainability try to help agencies in the necessary balancing among competing approaches.

National and State-Wide approaches

The recent National Cooperative Highway Research Program report, “A Guidebook for Sustainability Performance Measurement for Transportation Agencies” (NCHRP 708) and the new Sustainable Transportation Analysis & Rating System (STARS) are two examples of techniques to apply performance measurement to the planning and evaluation of the transportation system. The *NCHRP Guidebook* lists 11 sustainability goals for transportation agencies:

<i>Sustainability Goal</i>	<i>Definition</i>
Safety	Provide a safe transportation system for users and the general public
Basic accessibility	Provide a transportation system that offers accessibility that allows people to fulfill at least their basic needs
Equity/equal mobility	Provide options that allow affordable and equitable transportation opportunities for all sections of society.
System efficiency	Ensure that the transportation system’s functionality and efficiency are maintained and enhanced
Security	Ensure that the transportation system is secure from, ready for, and resilient to threats from all hazards
Prosperity	Ensure that the transportation system’s development and operation support economic development and prosperity
Economic viability	Ensure the economic feasibility of transportation investments over time
Ecosystems	Protect and enhance environmental and ecological systems while developing and operating transportation systems
Waste generation	Reduce waste generated by transportation-related activities
Resource consumption	Reduce the use of nonrenewable resources and promote the use of renewable replacements
Emissions and air quality	Reduce transportation-related emissions of air pollutants and greenhouse gases

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In the STARS framework, agencies use performance measures to assess whether a plan or project achieves the agency's goals and objectives. The goals and objectives are meant to be broadly based, addressing environment, economy and equity. The measures are then used to quantitatively evaluate the performance of alternative plans and projects to identify those alternatives that best achieve the objectives that the agency has established. The Santa Cruz Regional Transportation Council is now using the STARS framework in the development of their Sustainable Communities Strategy (SCS) and Regional Transportation Plan.

Another source for performance measures is Caltrans' "Smart Mobility 2010: A Call to Action for the New Decade," which calls for the use of performance measures to evaluate whether a proposed project or action advances the six Smart Mobility principles: location efficiency, reliable mobility, health and safety, environmental stewardship, social equity, and robust economy. The Caltrans proposal identifies 17 standards, shown below, for measuring how well plans and projects do in advancing these principles.

Principle	Performance Measure
Location Efficiency	1. Support for Sustainable Growth
	2. Transit Mode Share
	3. Accessibility and Connectivity
Reliable Mobility	4. Multi-Modal Travel Mobility
	5. Multi-Modal Travel Reliability
	6. Multi-Modal Service Quality
Health and Safety	7. Multi-Modal Safety
	8. Design and Speed Suitability
	9. Pedestrian and Bicycle Mode Share
Environmental Stewardship	10. Climate and Energy Conservation
	11. Emissions Reduction
Social Equity	12. Equitable Distribution of Impacts
	13. Equitable Distribution of Access and Mobility
Robust Economy	14. Congestion Effects on Productivity
	15. Efficient Use of System Resources
	16. Network Performance Optimization
	17. Return on Investment

Local Approaches

In the San Francisco Bay Area, much of the recent work on sustainability has focused on the use of performance measures to evaluate whether or not plans or projects help or hinder sustainability objectives and to monitor whether they are achieving those objectives over time. SB 375 mandates two benchmarks: greenhouse gas emissions reductions and regional housing supply. The regional transportation projects included in *Plan Bay Area* have been evaluated and scored against those mandates and another eight quantitative performance measures adopted by MTC in pursuit of the three Es:

- Reduce premature deaths from exposure to particulate emissions (includes three quantitative targets)
- Reduce by 50 percent the number of injuries and fatalities from all collisions
- Increase the average daily time walking or biking per person for transportation by 60 percent
- Direct all non-agricultural development within the urban footprint
- Decrease by 10 percent the share of low-income and lower-middle income residents' household income consumed by transportation and housing
- Increase gross regional product (GRP) by 90 percent – an average annual growth rate of approximately 2 percent (in current dollars)
- Increase non-auto mode share by 10 percent and decrease automobile vehicle miles traveled per capita by 10 percent.
- Maintain the transportation system in a state of good repair (includes three quantitative targets)

MTC is using these performance measures to evaluate the potential impact of proposed transportation projects, giving each project a score based on how well it would hit the quantitative targets. These scores were then mapped against a project cost/benefit assessment to determine which projects would provide the most benefit and best hit the

performance measures. MTC generally found these “high performing” projects tend to be low-capital projects that focus on roadway and transit efficiency.³

Exhibit 1 describes examples of how three other transportation agencies in California — ACTC, VTA, and MTA — are addressing sustainability in their plans and programs.

³ See this presentation on MTC’s Transportation Project Performance Assessment for more detail:
http://apps.mtc.ca.gov/meeting_packet_documents/agenda_1763/2_Project_Assessment_Presentation_-_rev.pdf

EXHIBIT 3: POTENTIAL STRATEGIES AND PROGRAMS TO IMPLEMENT SUSTAINABILITY AS PART OF THE 2014 CTP

These potential strategies and programs are all optional and are included as potential actions that the Authority and the RTPCs may review, consider and adapt as necessary to achieve their sustainability goals and objectives.

Resilient Design Principles

Resiliency already is an important component of the Authority's strategic planning. A resilient system is a sustainable system and this idea could be reinforced more explicitly through conscious design principles. By way of example, the network *ResilientCity.org* proposes several conceptual design principles for resilient cities, which could be easily adapted to apply to THE AUTHORITY's planning efforts and even incorporated into guidelines for evaluating transportation programs and projects proposed for Measure J funding:

1. **Diversity:** Increasing the diversity of the various transportation systems that comprise our circulation network reduces the potential negative impact to the whole network of the failure of any one particular system. Labor strikes and fuel shortages may affect one type of transportation system, such as buses, but not others, such as trains.
2. **Redundancy:** An increased redundancy of key infrastructure systems means that if one system is compromised, there is enough redundancy in the overall system to fill in for the compromised system until it can be replaced or repaired.
3. **Modularity and Independence of System Components:** Resilience capacity will be increased when system components have enough independence that damage or failure of one part or component of a system is designed to have a low probability of inducing failure of other similar or related components in the system.
4. **Feedback Sensitivity:** Feedback sensitivity is a system's ability to detect and respond to changes in its constituent parts. The more quickly a system can detect and respond to changes throughout the system, the greater its potential for effectively coping with these changes, and thus for resilience.
5. **Capacity for Adaptation:** Infrastructure that is designed to adapt quickly to changing conditions and requirements will increase overall resilience of a transportation system.
6. **Environmental Responsiveness and Integration:** Environmental responsiveness and integration will not only reduce the cost of creating and maintaining infrastructure, but reduce the relative probability of infrastructure suffering significant negative impacts from the increasing environmental shocks and stresses associated with climate change.

Using Complete Streets For Sustainability

Creating a region-wide Complete Streets system is an effective approach to sustainability because such a system would be more resilient, as a diversity of routes and modes could better survive shocks, such as high fuel prices, freeway incidents, natural disasters or locally blocked roadways. It would also advance better physical health by facilitating more biking and walking and could promote social equity by increasing accessibility of destinations to households who cannot afford private automobiles or are otherwise disadvantaged.

Specific Strategies for Action Plans

The Action Plan updates can play a vital role by providing a specific focus on how sustainability planning concepts for transportation projects and programs will help minimize impact on ecological system and resources and the world as a whole. The Action Plans can translate broad concepts for sustainability into specific strategies and actions for getting specific results. The following "checklist" of options could be considered and evaluated as part of the Action Plan updates.

1. **Reduce net energy consumption related to transportation projects and programs:**
 - Continue to make it easier for people to walk, bike, and use transit and support transit-oriented development.
 - Promote energy efficient transportation system design.
 - Use state-of-the-art green construction techniques and materials in all transportation projects.
 - Retrofit existing transportation facilities to be more energy efficient.
 - Generate renewable energy for transportation use using photo-voltaics, rooftop wind turbines, and other emerging technologies for EV charging and other needs.
 - Provide incentives for projects to incorporate facilities to support use of EV, hybrid, CNG, and other alternative fuel vehicles.
 - Provide non-automotive support infrastructure, such as bike racks and lockers, benches, and transit shelters.
2. **Conserve water and help restore and maintain ecological systems in transportation corridors:**

- Minimize water use for landscaping in transportation corridors with low-water use planting and water recycling.
 - Increase the number of street trees to create more shade, reducing the urban heat island effect, reducing energy needed for cooling buildings, and promote native low- or no-irrigation landscape features in transportation corridors.
 - Continuing restoration of riparian habitat along transportation corridors, consistent with local and regional plans.
 - Use green transportation infrastructure, like permeable paving, bioswales and bio-retention basins, to capture and filter runoff, recharge aquifers, and steward Contra Costa's watersheds.
3. **Minimize waste in transportation projects and programs:**
- Expand reuse and recycling in construction projects and transportation programs funded by Measure J.
 - Require all Measure J-funded programs and projects to implement "best practices" for construction waste management.
 - Provide incentives for the retention of historic facilities and reuse of buildings and transportation infrastructure.
4. **Support economic development and healthy communities through sustainable transportation:**
- Promote Contra Costa as an advantageous place to visit, conduct business, and live because of its multi-modal transportation system and sustainable transportation planning.
 - Help local jurisdictions create highly livable places that support economic development, healthy communities, and social needs and feature beautiful streets, parkways, and transportation system architecture.
 - Ensure pedestrian and bicycle networks are complete and link residential areas with transit and destinations (jobs, services, and parks).

Specific Programs that Could Advance Sustainability

Sustainability planning for transportation and land use requires consideration of a broad range of factors that, as an integrated whole, support healthy, functional ecological

relationships and the long-term viability of development patterns. Sustainable communities enjoy lasting environmental, economic, and social benefits.

Along these lines, the 2014 CTP Update could incorporate energy efficiency initiatives as well as protections and enhancements for the natural systems to which urban development and transportation systems are connected. The update also could spur creative thinking about new fuels and new technologies and transportation system management and pricing systems that could be supported by the Authority as part of a comprehensive set of sustainable transportation strategies.

Some programs the Authority could consider that would advance sustainability include:

Digital Communication

Intelligent Transportation Systems (ITS) and real-time ridesharing programs could make more efficient use of the existing roadway and transit systems by directing users to routes with excess capacity or better service, such as alternative roadways, faster transit routes, or private autos in which drivers are willing to share rides. This category could include NextBus-type programs to provide improved information for pedestrians and bikes. Over the long term, these programs can reduce the need to expand the existing highway and arterial street network, thereby reducing economic and environmental costs.

Energy and Resource Efficient Transportation Facilities

Appropriate plans, programs and engineering design standards, energy-saving technologies, congestion pricing, parking management, and behavioral change can substantially reduce energy and greenhouse gas impacts resulting from transportation systems. Energy efficiency already is a mandate as well as a priority for cars, trucks, buses and transit rolling stock. Charging stations can facilitate use of electric vehicles (EVs) and preferential parking programs can provide incentives for their use.

For heating and cooling in transit stations, buildings and maintenance facilities, energy efficiency can be increased in a variety of ways, including: super insulation, efficient mechanical systems, passive solar features (for winter), shading devices (for summer), and natural ventilation using operable vents and windows. For street lighting, energy can be saved with low-energy fixtures, and in buildings interior “daylighting” from windows, skylights, and light shelves to bounce sunlight into interior spaces reduces energy use. Finally, photovoltaic and wind technologies are being incorporated into many new buildings to generate clean energy and offset greenhouse gas emissions.

Transit-Oriented and Pedestrian-Supportive Development

Transportation today is the single largest contributor to Contra Costa's greenhouse gas emissions and to air pollution. In the future, this contribution may decline as electric and hybrid vehicle use increases and emissions per mile from gasoline-powered vehicles are reduced with mandated technological controls (Pavley I and Pavley II rules for increases in vehicle mileage under AB 1493). Planning for walk-to destinations (such as shops, services, and amenities) and easy access to transit help make urban areas, particularly downtowns, become places where residents, workers, and visitors can travel easily on foot, thereby minimizing potential net increases in GHG-related emissions from automobile use. Along these lines, a large number of PDAs have been established in Contra Costa County. For travel into and out of downtowns, transit service must be frequent and reliable. Higher densities in transit corridors identified by local General Plans support transit use and the availability of walk-to conveniences.

Measure J includes a specific program, Transportation for Livable Communities, that supports the development of transit-oriented and pedestrian-supportive districts and affordable housing. The Measure J Growth Management Program also requires jurisdictions to incorporate policies and standards into its development review process to ensure that the needs of pedestrians, bicyclists and transit users are considered.

Urban Runoff related to Transportation Facilities

Urban runoff related to transportation facilities includes the rainwater and landscape irrigation water that runs off of streets and highways, driveways and parking lots, and carries pollutants, such as motor oil, tire debris, and litter. Increased urban runoff is a direct consequence of unmitigated urban development and where hard impervious surfaces flush rooftops, parking areas and streets directly into storm sewers.

The 2014 CTP could include additional funding for local governments who make specific commitments to expanding green transportation infrastructure. In this context, "green infrastructure", or as they are often referred to, "low impact development (LID)" technologies, refers to a menu of techniques that filter pollutants before they reach the culverts that carry them to receiving water resources such as the creeks and the aquifer, and to other techniques for reducing the amount of paved space that can capture and concentrate pollutants. Paving can be permeable to trap pollutants and slow runoff. Vegetation and soils can filter and hold stormwater. Swales and other surface drainage can complement the stormwater pipes now in existence. Such features are becoming commonplace as standards for stormwater quality become progressively more stringent. Details of how this might be done can be developed in the Action Plan updates as well as in the CTP itself.

Conserving Water through Sustainable Transportation Planning

With the new Countywide Sustainability Planning Policy in place and the actions that would follow from it, the Authority can help East Bay Municipal Utilities District (EBMUD) and other water purveyors conserve water resources affected by transportation facilities and programs. This is important because there will be increasing competition statewide for California's scarce water resources.

For landscaped areas in transportation corridors, for example, low-water use plants and water-conserving irrigation systems are essential, and much already is being done. The State has a model water efficient landscape ordinance, but more can be done by public agencies, and sharing information on best practices for landscape design and maintenance and water conservation in general may have additional benefits. More specifically, water use budgets could be established for transportation projects as they often are for buildings and land development projects. Using such performance requirements will be more productive than micro-managing landscape design. THE AUTHORITY might support the efforts of water agencies to use recycled water for landscaped areas in transportation corridors. Also, the stormwater management techniques discussed above can serve a dual purpose of water conservation in landscaping as well.

Street Trees and Urban Forests

Contra Costa's older communities as well as newly developed neighborhoods and employment centers will gain from more trees, and the Authority can support tree planting in transportation corridors where this makes sense, is safe, and is consistent with local General Plans. Trees have significant environmental, aesthetic, and economic benefits. Shaded streets and shaded parking lots are significantly cooler on summer days and create a more pleasant visual walking environment. Air quality authorities promote urban tree planting programs to reduce the heat absorbed by unshaded asphalt and other high-temperature "heat islands." Heat islands make urban places less comfortable, but also increase the rate at which nitrogen oxides reacts with airborne pollutants to generate ozone – further contributing to the generation of smog and the incidence of respiratory ailments. Such heat and pollution also detracts from strategies to promote more walking and cycling. Street trees also play a major role in enhancing Contra Costa's character and charm – and will help create an exceptional sense of place.

Support for Mandated Greenhouse Gas Emissions Reductions

Goals, policies, and implementing actions contained in the updated CTP will help regional agencies meet targets for GHG reductions set in Plan Bay Area. The transit-oriented location and pedestrian-supportive forms of development in local General Plans will reduce per-capita transportation-related greenhouse gas generation for current and new residents and commuters, and contribute to the Region's greenhouse

gas reduction goals. CTP policies and project design and funding criteria also can require new construction that incorporates low-impact design and technologies for reducing energy use, conserving water, and avoiding waste.

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CTP Task Force
2012

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2014 CTP Update

Proposed Products and Meeting Schedule

VER3: DECEMBER 3, 2012

Group	Date	Activity
2012		
PC/CCTA	Dec 19	Review Sustainability Paper
2013		
PC/CCTA	Jan 2	Action Plan consultants initiate work with RTPCs
	Feb 1	RFP for EIR consultant released; consultant "on-board" by June 1 to begin preparing NOP and "settings" sections
	Jan - June	Outreach, Technical and Policy Work on CTP Update
	July 1	NOP released to initiate environmental review
RTPCs	Jan - May June 1	Develop Draft Action Plans with Authority's consultants Proposed Preliminary Action Plans for RTPC Review completed; 45-day review
RTPCs	July-Aug	RTPCs review Preliminary Draft Action Plans
RTPCs	Sept	RTPCs circulate Draft Action Plans - 45-day review
PC/CCTA	Aug	Revisions to Proposed Preliminary Action Plans to reflect RTPC direction; review comments on NOP
	Sept. 1	CEQA "Project Definition" of Action Plans, Draft CTP and alternatives to initiate impact analysis
RTPCs	Nov	RTPCs approve Draft Action Plans for incorporation into the 2014 CTP
PC/CCTA	Nov-Dec	Incorporate Draft Action Plans into Draft CTP
Authority's EIR consultant	Dec 1	Administrative Draft EIR completed for Authority Staff review
CCTA	Dec 31	Release Draft 2014 CTP and EIR
2014		
	Jan 2 -Feb 15	45 Day Review Period for Draft EIR
Public	Feb 15	Close of Comment Period on DCTP DEIR
TCC	March	Review Comments Received on DCTP; recommend revisions

Group	Date	Activity
PC	March	Discuss policy issues raised by comments on the Draft CTP
Authority; consultants	Mar- Apr	Review comments on DCTP and DEIR and discuss; propose revisions to DCTP; prepare Final ER, including Findings, Facts in Support of Findings and Overriding Considerations
CCTA	April 15-20	Final EIR released to State Clearinghouse and County Clerk (minimum 10 days before public hearings on certification)
TCC	April 17	Review and recommend approval of proposed Final 2014 Update to the CTP, including action plans
PC	May 7	Review and recommend certification of EIR and approval of proposed Final 2014 Update to the CTP, including action plans
Authority	May 21	<ul style="list-style-type: none"> • Certify Final EIR for the 2014 CTP Update • Adopt Final 2014 Update to the CTP
Staff consultant	July	Publish final CTP
RTPCs	Aug/Sept	Adopt Final Action Plans