



COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

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January 11, 2012

AGENDA DATE: January 24, 2012

Board of Supervisors
701 Ocean Street
Santa Cruz, CA 95060

STATUS REPORT ON DEVELOPMENT OF CLIMATE ACTION STRATEGY (CAS) FOR SANTA CRUZ COUNTY, AND PRESENTATION OF GREENHOUSE GAS INVENTORIES

Members of the Board:

In April 2011 your Board directed the Planning Department to return in April 2012 with a draft Climate Action Strategy (CAS) for your consideration. The purpose of this letter is to report on progress on the approved work plan, to present the updated and refined baseline greenhouse gas emissions inventories for both County government and the community as a whole, and to discuss the proposed content of the draft CAS, which will be presented to your Board next April.

PROGRESS ON THE APPROVED WORK PLAN

The approved work plan consists of the following primary Tasks:

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|--------|--|
| Task 1 | Determine Scope of Climate Action Strategy |
| Task 2 | Review Baseline Greenhouse Gas Inventories & Set Emissions Targets |
| Task 3 | Identify and Evaluate Emissions Reductions Measures |
| Task 4 | Climate Action Adaptation Strategies |
| Task 5 | Outreach to Regional Agencies, County Commissions & Community |
| Task 6 | Develop Draft Climate Action Strategy (initiate preparation of CEQA document after Draft CAS is accepted as the "project description") |
| Task 7 | Prepare Final Climate Action Strategy for Adoption |

Staff has completed Tasks 1 and 2, as well as portions of Tasks 3, 4, and 5. Coordination and outreach have been ongoing and will continue. Information and discussion of factors related to certain of the work tasks is provided on the following pages. Also, certain adjustments to the work plan are also reviewed.

Task 1: Determine Scope of Climate Action Strategy

Based on extensive research of climate action planning throughout California, staff has developed an outline for the CAS and has identified analytical methods suitable for

understanding the County inventories and for estimating the reductions that any given mitigation measure may produce.

Task 2: Review Baseline Greenhouse Gas Inventories & Set Emissions Targets Greenhouse Gas Inventories

Analysis of GHG emissions inventories is relatively straightforward when there is a clear understanding of the limitations of the data. The task of reviewing the baseline GHG inventories for County government operations and community activities, and updating the inventories, has accounted for most of the work on this project to date. Baseline inventories for the year 2005, which were prepared for the County by outside agencies, were updated to increase accuracy, and the spreadsheet tools were modified to allow for in-house updates in the future. This task was expanded to include the preparation of additional inventories for the year 2009 for government operations and community activities. This involved close coordination with staff from the General Services and Public Works Departments, and numerous contacts with other County staff, and regional and State agencies during the data gathering and analysis process.

Setting Emissions Targets

The State of California has established a target to reduce GHG emissions to 1990 levels by 2020. The State and others are considering that 1990 levels would be equivalent to achieving **15% below 2005 levels by 2020** (AB 32 California Global Warming Solutions Act). The State, through Executive Order S-3-05, has also established a GHG reduction target of **80 percent below 1990 levels by 2050**.

The CAS work plan calls for setting a local emissions reduction target, which could be set consistent with the State's targets, or which could aspire to greater reductions in GHG emissions. Ideally, the target is established after feasible GHG reduction measures are identified and an estimate of the effectiveness of the proposed measures has been made, so that the targets reflect an understanding of the type and magnitude of the effort that will be required to meet the emissions reduction goals.

Analysis of potential actions to reduce emissions, along with an estimate of the relative amount of the reduction that might be expected from each action, will be included in the draft CAS in April. Therefore, at this time staff is working toward developing a CAS that will meet the State's 2020 and 2050 goals, while recognizing that the Board may ultimately decide to select a different local emissions reduction target in April 2012, when your Board will have the benefit of information about specific GHG reduction measures.

Task 3: Identify and Evaluate Emissions Reductions Measures

The main strategies for making reductions statewide are outlined in the Scoping Plan adopted by the California Air Resources Board to implement AB 32, which includes guidance on GHG reduction levels for local jurisdictions. It should be noted that analysis of GHG emissions *reduction* measures is more subjective than analysis of GHG emissions *inventories*, due to the many assumptions and uncertainties involved in predicting the effectiveness of any particular emissions reduction activity or program.

The draft CAS will include a general prioritization of recommended greenhouse reduction measures, and a proposed monitoring program to track progress toward our emission reduction goals.

Task 4: Climate Action Adaptation Strategies

Even with reduction of GHG emissions, impacts of global climate change will likely be felt with increasing magnitude in the future. Staff originally envisioned preparing a climate change vulnerability assessment and an adaptation plan as part of the CAS. However, it has become clear that preparing a full adaptation plan that inventories the County's specific vulnerabilities and which lays out a plan for reducing the negative impact requires a significant amount of staff work and cannot be accomplished at this time. However, in recognition of the fact that adaptation is an important piece of a comprehensive climate action strategy, and to address Task 4 of the work plan, staff will prepare a draft scope of work for a vulnerability assessment and will collate existing information regarding what an adaptation plan might include when one is prepared.

Task 5: Outreach to Regional Agencies, County Commissions & Community

Input from regional agencies, County commissions, and the community is important for a successful CAS. Staff has been in contact with regional agencies including AMBAG, MBUAPCD, and SCCRTC. A presentation of the material in this letter to the Commission on the Environment is scheduled for January 25th. Further coordination with these groups and others involved in climate change will occur as we analyze proposed emissions reduction measures. Staff is planning to schedule additional outreach to the public, including re-scheduling the planned public meeting to a time that would occur after completion of the draft CAS, when a GHG reduction target and potential mitigation measures have been identified and can be explained to the public in a way that will facilitate their input. Staff believes that seeking input after there is a draft proposal available for the public to respond to, but before emissions reduction measures are fully prioritized, is a productive way to include ideas and feedback from the community. Once the Draft CAS is accepted by the Board of Supervisors as the "project description" for CEQA, that document will be prepared, which will also be subject to public review and comment.

Task 6: Develop Draft Climate Action Strategy (and prepare CEQA document after Draft CAS is accepted as the "project description")

The results of each of the above tasks will provide the information and analysis needed to prepare the Draft Climate Action Strategy. The Draft CAS will be presented to the Board of Supervisors for acceptance as the document that will be the subject of CEQA analysis. After the draft CEQA document is prepared, it will be circulated for public review and comment.

Task 7: Prepare Final Climate Action Strategy for Adoption

The Draft CAS will be refined based on the results of CEQA analysis and public review and comment, and then the Final CAS will be the subject of public hearings, for the Board to consider adoption of a Final Climate Action Strategy.

INFORMATION REGARDING COUNTY OF SANTA CRUZ GREENHOUSE GAS EMISSIONS INVENTORIES

GHG emissions inventories are a tool to document the sources of emissions and the relative amount of emissions coming from different sectors. The separate inventories of emissions from County government operations and from community activities direct us toward the actions which will be the most effective at reducing emissions for our unique circumstances. Inventories also provide the accurate baseline of emissions that is necessary for setting an emissions reduction target and for measuring progress over time.

Inventories of emissions from County government operations and from community activities have been prepared for the baseline year of 2005, which is a commonly accepted baseline year in California¹. An update of each inventory has been prepared for 2009, the latest year in which a complete data set is available. The results of the inventories are summarized below, with additional graphic information available in Attachments 1 and 2.

It is important to note that the inventory results should not be considered absolute amounts of emissions, particularly within the community inventory, because the inventories do not include all possible emissions, and the emissions that are counted have been estimated to varying degrees of accuracy. Emissions that are not included are ones that are very difficult to measure accurately, such as emissions from rural propane use and emissions associated with agriculture. However, the inventories do give a reasonably accurate picture of the relative amounts of emissions being generated by different activities, in a manner which can be tracked over time to measure trends in overall emissions.

Government Operations Inventory

Attachment 1 provides a summary of the GHG emissions inventories for Santa Cruz County government operations in 2005 and 2009. In 2005, total emissions were about 39,000 metric tons of carbon dioxide equivalent (CO₂e)², falling to about 34,000 metric tons CO₂e in 2009. The largest contribution of GHG emissions in the government operations inventory is the solid waste that is releasing methane into the atmosphere as it decomposes in the Buena Vista and Ben Lomond landfills. The next three sectors, employee commute, buildings and facilities, and vehicle fleet produce fairly similar levels of emissions.

While County government operations are the activities over which your Board has the most direct influence, they represent a very small portion of the overall emissions generated in the unincorporated area. For comparison, only 3.3% of the total community emissions in 2009 were attributable to the County's own governmental operations. This draws the focus

¹ The Scoping Plan prepared by the California Air Resources Board to implement the California Global Warming Solutions Act of 2006 (AB 32) recognizes that most local communities will use 2005 as their baseline year for evaluation of greenhouse gas emissions.

² There are many gases that contribute to the greenhouse effect, including CO₂ (Carbon Dioxide), CH₄ (methane), NO₂ (Nitrogen Dioxide) and others. Some of these gases are more powerful modifiers of the atmosphere than others. Therefore, the term CO₂e (carbon dioxide equivalent) will be used throughout this report as the standard measurement for greenhouse gas accounting. For example, CH₄ is 21 times more powerful than CO₂ as a greenhouse gas, and therefore one unit of CH₄ may be expressed as 21 CO₂e.

of emissions reduction activity to the community inventory, and particularly the transportation sector.

Community Inventory

Attachment 2 provides a summary of community wide GHG emissions in 2005 and 2009. In 2005, Santa Cruz County's total community-wide GHG emissions were about 2.2 million metric tons of CO₂e. Emissions from the Davenport cement plant accounted for about half this total. The 2009 emissions inventory shows a very dramatic reduction in the commercial and industrial sector, which reflects the closure of the cement plant in Davenport. The 2009 inventory shows less dramatic changes in other sectors, including reductions in the transportation and solid waste sectors and an increase in the residential sector. The 2009 inventory shows the vast majority of the community emissions in 2009 come from the transportation sector, which points to fuel use and Vehicle Miles Traveled (VMT) as very significant contributors to our local emissions picture. The second largest contributor is the residential sector, which indicates that home energy use is also a very significant factor.

FORECAST OF FUTURE GHG EMISSIONS

In order to gauge the magnitude of the emissions reductions that will be needed to meet a given target, it is useful to estimate a "business as usual" (BAU) forecast. The BAU forecasts future emissions assuming no new actions are taken to reduce emissions and the economy grows according to previously established regional projections, i.e. the economic downturn does not continue out to 2020 and 2050. Inherent difficulties in predicting the future notwithstanding, the BAU forecast is a helpful tool that indicates how much reduction must be accomplished in order to reach any given level of emissions by 2020 or 2050.

The BAU forecast uses the AMBAG 2008 Regional Forecast for population, housing units, and employment, and the Metropolitan Transportation Plan (MTP) 2008 Supplemental EIR, which estimates future trends in VMT out to 2035. Trends in housing units and employment can be used to forecast emissions in the residential and commercial/industrial sectors, respectively, and trends in VMT can be used to forecast emissions in the transportation sector. It should be noted that AMBAG is in the process of updating their forecasts and the BAU may be slightly modified as a result.³

As mentioned above, the State has established targets to reduce greenhouse gas emissions to 1990 levels by 2020, which translates to a 15% reduction of 2005 levels by 2020⁴, and 80 percent below 1990 levels by 2050 (Executive Order S-3-05). As shown in Attachment 3, in unincorporated Santa Cruz County the State's goal for 2020 has already been met as a result of the closure of the cement plant. However, the 2050 reduction

³ The forecast is based on the 2009 inventory year, and not the trend between 2005 and 2009, because of the significant uncertainty involved with projecting a trend based on only two data points, and because of the unique circumstances related to the cement plant closing, and the significant downturn in the economy that occurred between 2005 and 2009.

⁴ The State Scoping Plan that implements AB 32 assumes most jurisdictions will use 2005 for their baseline emissions, and states that 15% below 2005 levels is considered roughly equivalent to 1990 levels.

target, which is extremely ambitious, has not been met, and therefore our focus turns to that longer term goal. Even though 2050 seems distant, the kinds of emission reduction measures that will be required to meet that goal are themselves long term types of investments, such as improvements in multi modal transportation infrastructure to decrease VMT, changes in land use patterns to decrease VMT, and development of alternative energy infrastructure and markets.

The BAU forecast represents a worst case scenario in that it assumes no mitigation actions to reduce GHG emissions are taken, when in fact actions have been and are being taken at the State and local level. Examples are regulations that are already in place but are just coming into effect that will improve fuel efficiency of vehicles and increase use of renewable energy. However, these actions will not achieve the levels of reduction that will be necessary to meet targets. The County CAS will need to identify actions that create substantial additional reductions in emissions to achieve the 2050 GHG reduction target of 80% below 1990 levels as established by Executive Order S-03-05.

SUMMARY

Preparation of the County CAS is well underway. GHG emissions inventories have been completed for the baseline year 2005 and for 2009. Mitigation measures that can reduce emissions are being collected, analyzed, and, to the extent possible, expected returns (reductions) from each type of measure will be estimated. This information will be presented in the draft CAS and used to recommend a GHG emissions reduction target. Prioritization of mitigation measures will be reflected in a recommended implementation plan that will include a provision for periodic inventories to monitor emissions and measure success, and to adapt the plan to consider new information about climate change as it becomes available.

Additional public outreach to gather input from the community will occur following completion of the draft CAS. This will allow for a productive community process that will inform the final CAS.

RECOMMENDATION It is RECOMMENDED that your Board accept and file this report.

Sincerely



Kathy Molloy Previsich
Planning Director

RECOMMENDED:



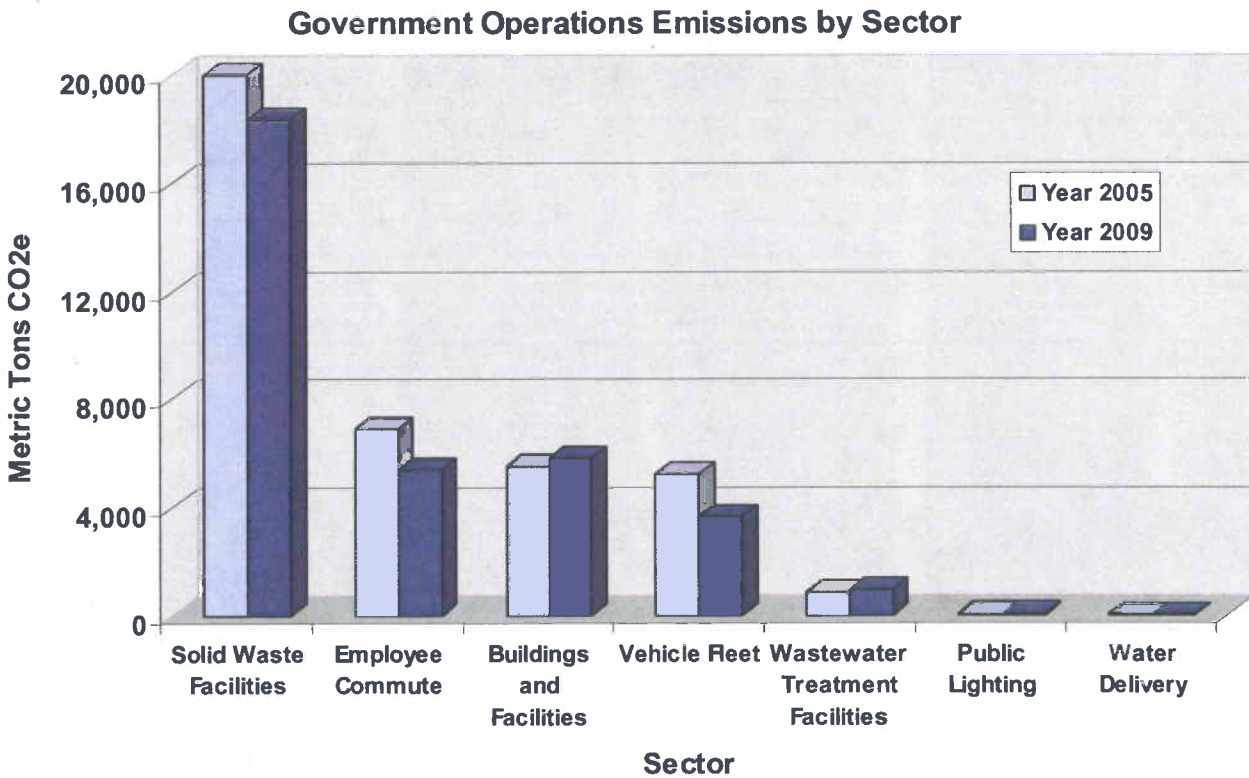
SUSAN A. MAURIELLO
County Administrative Officer

Attachments:

1. Summary of Government Operations GHG Emission Inventory
2. Summary of Community Inventory GHG Emission Inventory
3. "Business as Usual" Emissions Forecast

CC: Commission on the Environment

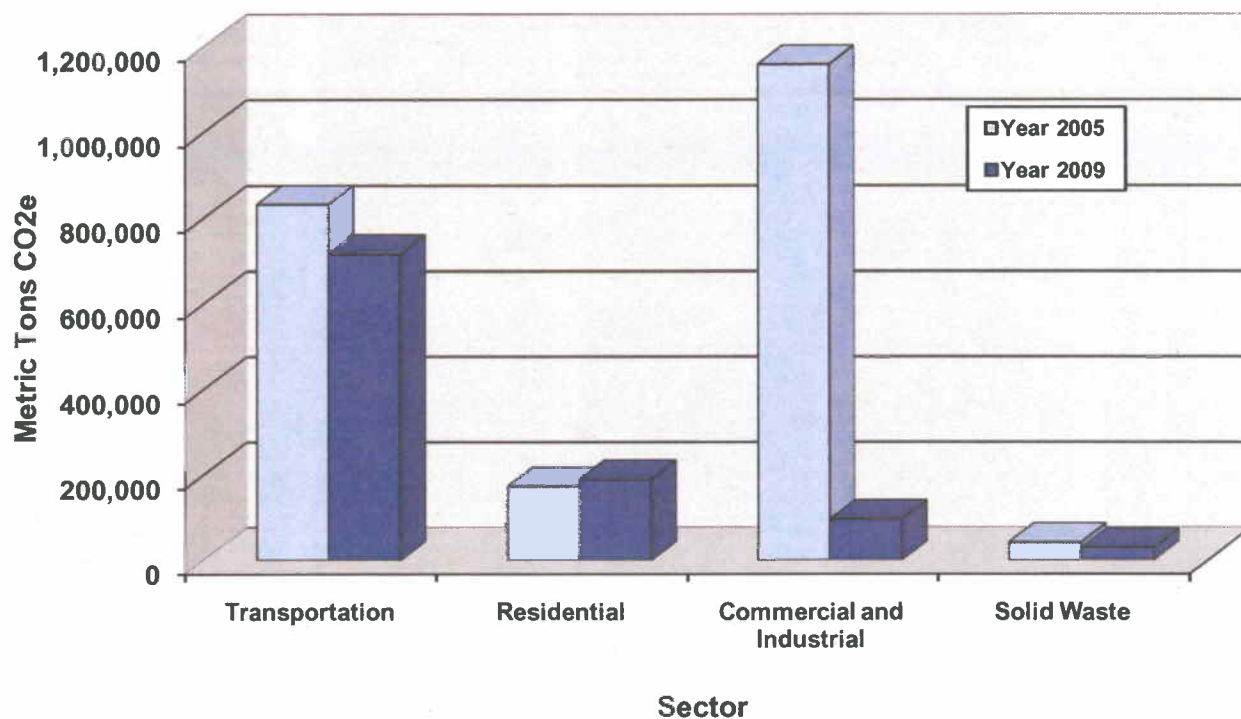
Government Operations Emissions by Sector			
Sector	Metric Tons CO ₂ e Emitted		Percent Change from 2005 Baseline
	Year 2005	Year 2009	
Solid Waste Facilities	20,261	18,335	-10%
Employee Commute	6,928	5,370	-22%
Buildings and Facilities	5,525	5,847	6%
Vehicle Fleet	5,253	3,673	-30%
Wastewater Treatment Facilities	848	941	11%
Public Lighting	62	69	11%
Water Delivery	24	32	33%
Total	38,901	34,267	-12%



Note: (1) The accuracy of measuring emissions in the employee commute and vehicle fleet sectors improved between 2005 and 2009, leading to an inability to perform direct comparison of the sectors' emissions year to year. Relative comparison, however, is valid. These sectors likely experience reductions in emissions, but the reductions were probably not as dramatic as indicated.

Community Emissions by Sector			
Sector	Metric Tons CO ₂ e Emitted		Percent Change from 2005 Baseline
	Year 2005	Year 2009	
Transportation	831,829	716,501	-14%
Residential	173,336	189,658	9%
Commercial and Industrial	1,158,119	95,878	-92%
Solid Waste	41,952	30,255	-28%
Total	2,205,236	1,032,292	-53%

Community Emissions by Sector



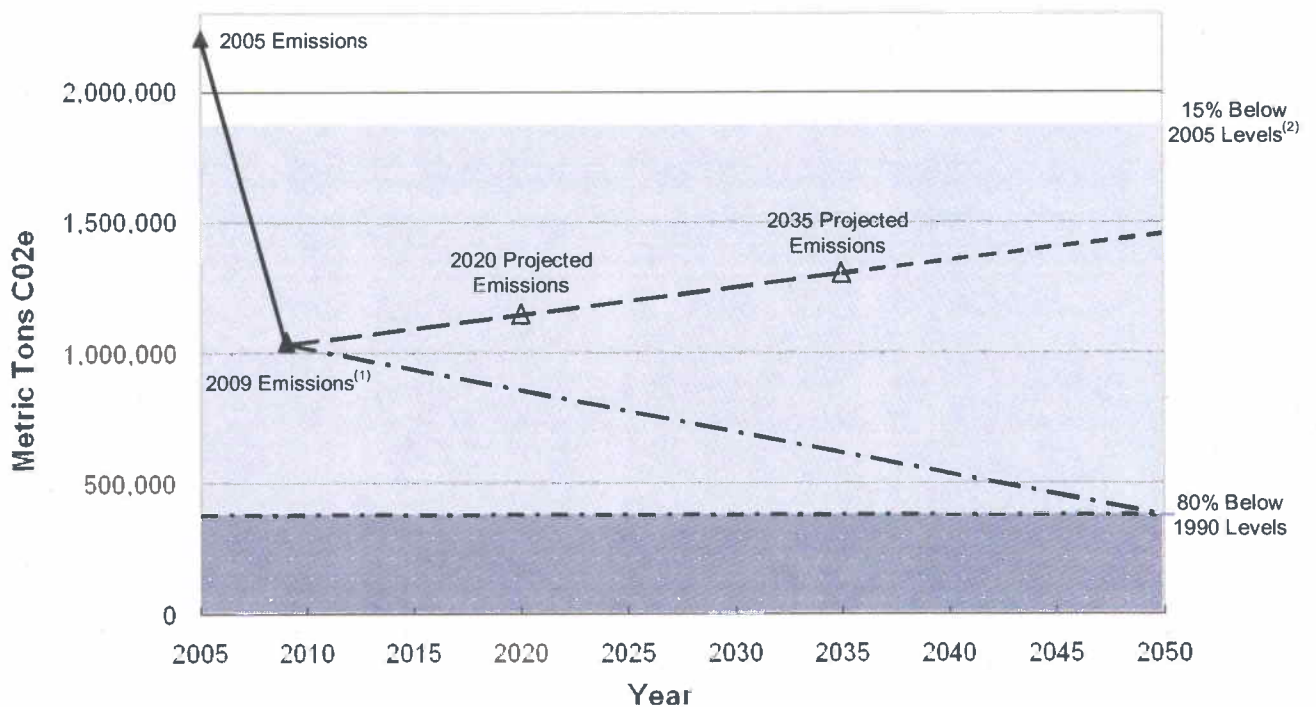
Notes: (1) The ability to interpret change in the commercial/industrial sector is hampered by the inability to completely subtract the contribution from the cement plant from the 2005 inventory. Almost all of the emissions from the cement plant consist of stack emissions, with a portion of emissions resulting from electricity use (conveyor belt, etc.), which appears to have been a large amount of electricity relative to other electricity use in this sector. While stack emissions are known and can be eliminated, electricity data in this sector is not detailed enough to effectively eliminate use attributable to the cement plant. However, based on known economic conditions it is assumed that this sector as a whole, not counting the cement plant, still experienced some emission reduction between 2005 and 2009.

(2) The emissions in the transportation sector are calculated by multiplying vehicle miles traveled (VMT) on local roads and state highways by a range of emissions factors based on vehicle type. While the VMT on local roads applies to the approximately 600 miles of county-maintained roads in the unincorporated portion of the County, the VMT on state highways applies throughout all jurisdictions in the County for all travel within the County, including vehicles traveling through the county (pass through miles). It was determined to not be reasonable to attempt to apportion this VMT to various jurisdictions, or pass through miles. Rather than focusing on apportioning responsibility for highway VMT, it may be more effective to keep emissions associated with travel on state highways within the County inventory, focus on regional cooperation amongst the various cities, the Regional Transportation Commission (RTC) and the Association of Monterey Bay Area Governments (AMBAG) to reduce emissions, and track progress through monitoring updates of the County inventory.

Community Emissions Growth Projections by Sector				
Sector	Inventory Years		Forecast Years from 2009	
	2005	2009	2020	2035
Transportation	831,829	716,501	816,811	952,946
Residential	173,336	189,658	195,348	201,037
Commercial / Industrial	1,158,119	95,878	105,466	121,765
Solid Waste	41,952	30,255	30,255	30,255
Total	2,205,236	1,032,292	1,147,880	1,306,004

Note: (1) Figure no longer includes emissions from the Davenport cement plant due to closure in 2008.

Business as Usual Growth Projections and Statewide Reduction Targets



Notes: (1) The forecast is based on the 2009 inventory year, and not the trend between 2005 and 2009, because of the significant uncertainty involved with projecting a trend based on only two data points, and because of the unique circumstances related to the cement plant closing, and the significant downturn in the economy that occurred between 2005 and 2009.
 (2) The Scoping Plan prepared by the California Air Resources Board to implement the California Global Warming Solutions Act of 2006 (AB 32) recognizes that most local communities will use 2005 as their baseline year for evaluation of greenhouse gas emissions, and provides that a goal of 15% below 2005 levels is considered roughly equivalent to reducing emissions to 1990 levels by 2020, which is the goal established by AB 32.

Alicia Murillo

From: cdbbosmail@co.santa-cruz.ca.us
Sent: Tuesday, January 24, 2012 12:29 AM
To: CBD BOSMAIL
Subject: Agenda Comments

Meeting Date : 1/24/2012

Name : Angela Flynn

Address : 351 Redwood Heights Road
Aptos, CA 95003

Comments :

Two items must be emphasized for our Climate Action Strategy. First, our broadband needs must utilize Fiber placed on making it safe and fun for people to commute by bicycle.

Fiber is the only system that will lower energy use and be able to keep up with future broadband needs. Abu

In Chattanooga, TN. EPB has estimated that its fiber smart grid will save its customers roughly \$300 million continued to transmit data after being ripped from the ground by a tornado.

According to SmartGridNews, Fiber's benefits include ultimate reliability and performance, it is self healing, a replacing to meet future bandwidth needs.

The American Recovery and Reinvestment Act has \$7.2 billion for broadband infrastructure. Fiber is the bes

Riding a bicycle is the most efficient means of transportation known to exist. I recently moved back here afte made the city a bike friendly city. The D.C. Department of Transportation calls for 10 new miles of bike lanes

Our county has hundreds of miles of bike lanes and trails, however these are not helpful for novice riders wh lanes are along busy roads with heavy automobile and truck traffic.

Bike trails and lanes should be designed for commuting cross county. Vehicle traffic and pollution should be asphyxiating experience due to the pollution from cars on Soquel and Highway 1. It is not a pleasant bike rid

Areas that create safe bike trails with no gas or electric powered vehicles and have bike lanes that do not all

Here are a few statistics on bike riding

40 percent of those surveyed say they would commute by bike if safe facilities were available

Increase in property values is evident in Davis, California. With a population of about 60,000, Davis built an e substantially.

An urban freeway costs about 2,500 times more per mile than an urban bikeway.

Motor vehicle emissions represent 31 percent of total carbon dioxide, 81 percent of carbon monoxide, and 49

1/24/2012

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Short car trips are more polluting than longer trips because 60 percent of the pollution resulting from auto en

A four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe.

People will commute by bicycle if bikeways are convenient, comfortable, attractive and safe. This needs to b

CYCLING REFERENCES

<http://www.environment.ucf.edu/bikepath/27%20Reasons%20to%20Bike.htm>

<http://www.bikeleague.org/resources/why/environment.php>

<http://www.waba.org/index.php>

<http://capitalbikeshare.com/>

FIBER REFERENCES:

Etisalat Study Reveals Fiber-Optic Network Reduces Carbon Emissions by 85%

Abu Dhabi, 19 January 2010,

<http://etisalat.ae/index.jsp?>

[lang=en&type=content&tid=10c8e15c0b56a010VgnVCM1000000a0a0a0a_____&contentid=324628b181b36%](http://etisalat.ae/index.jsp?lang=en&type=content&tid=10c8e15c0b56a010VgnVCM1000000a0a0a0a_____&contentid=324628b181b36%2)

Chattanooga, TN

A BRIGHT IDEA

Dec 1, 2011 12:00 AM, By Colman Kean

An electrical utility finds that installing a fiber-optic backbone for its smart grid not only improves its service to

http://urgentcomm.com/networks_and_systems/mag/chattanooga-fiber-optic-smart-grid-201112/

Smart grids exist first and foremost to improve the provisioning of electricity to customers. To do this, a smart meter is installed at each customer's location, and the meter is measured simultaneously, and the faster that the data can be transferred for analysis, the faster a utility can respond to a problem. Fiber also is extremely resilient. For example, a recent tornado ripped fiber-optic cable from the ground in Chattanooga, TN. So, for operational reasons alone, fiber is a sound investment. However, EPB fully was aware of the potential

Kansas City, KS and MO

Google fiber may help smart-grid efforts overcome price impediments

[http://www.bizjournals.com/kansascity/print-edition/2011/08/26/google-fiber-may-help-smart-grid.html?page=](http://www.bizjournals.com/kansascity/print-edition/2011/08/26/google-fiber-may-help-smart-grid.html?page=1)

"Economics are everything about this," said Tom Grant, senior director of business development at Kansas City, Mo. for 30 years.

The economics of smart-grid technology in the area took a positive turn with news that Google Inc. plans to launch fiber in Kansas City, Mo.

10 Reasons Why Fiber Is the Right Choice for Your Smart Grid Network

Feb 23, 2010

http://www.smartgridnews.com/artman/publish/Technologies_Communications_News/10-Reasons-Why-a-Fiber-Is-the-Right-Choice-for-Your-Smart-Grid-Network

While the upfront costs of deploying fiber can be significantly higher than the other options, it nonetheless offers several advantages:

- 1) Information at the speed of light. Communication in both directions on a fiber network is instantaneous - almost as fast as the speed of light.
- 2) The more responsive, the more cost effective: The more easily and efficiently power usage can be monitored, the more power generation facilities is reduced, prolonging their life without costly investments in repairs, upgrades and maintenance.
- 3) Ultimate reliability and performance. Fiber optic cables, whether buried or overhead, offer improved reliability and performance.
- 4) Self-healing: A fiber-based system can be designed with redundant pathways to ensure a continuous flow of data.
- 5) Feeding the grid: "Green" residential developments are already taking hold across the U.S., in which home solar panels allow for much more efficient management of the supply of power by these micro-producers back to the grid.
- 6) Future proof. Once a fiber pipe is in place it has almost limitless capability to handle more bandwidth and can be replaced to increase bandwidth, only the electronics at either end.
- 7) Why stop at power management? That big fiber pipe allows a public utility to branch out into new broadband services like HD and IP television, and telephone, with lightning fast connection speeds of up to 100 mbps.

- 8) Underserved and over charged. In many communities, incumbent telecommunications providers without w often times higher rates. The expansion by a public utility into fiber-based triple-play services will introduce re for both commercial and residential customers. Public utilities are local, have significant infrastructure experi
- 9) Stimulating the local economy. Fiber optic networks provide tremendous communications capabilities to e the community to attract new industry and skilled workers. Much like the interstate highway system 50 years
- 10) Obama's broadband boost. The American Recovery and Reinvestment Act has provisioned billions for p another \$7.2 billion for broadband infrastructure. This is a golden opportunity to forge ahead with truly next-g