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Report on Range of Projected Emission Reductions – 09/07/2016

During the June 27, 2016 teleconference meeting with California Air Resources Board (ARB) staff, SBCAG staff presented preliminary results from the updated Fast Forward 2040 Regional Transportation Plan-Sustainable Communities Strategy (RTP-SCS) land use and transportation scenarios developed to inform SBCAG's RTP-SCS update process. These scenarios were crafted based on close consultation with Joint Technical Advisory Committee (JTAC) and SBCAG member agency planning and public works departments, as well as transit operators, and represent updated land use and transportation scenarios evaluated in the adopted 2013 RTP-SCS.

For purposes of the June discussion, the preliminary modeling results presented to ARB staff focused on two future year scenarios:

- Scenario 1 (Future Baseline): Based on existing, adopted General Plan land uses. it assumes that current sub-regional growth trends will continue, consistent with the 2012 Regional Growth Forecast.
- Scenario 3 (TOD/Infill with Enhanced Transit Strategy): The preferred scenario in the adopted 2040 RTP-SCS. which selectively increases residential and commercial land use capacity within existing transit corridors, reflecting local planning discussions about possible future land use and General Plan and Community Plan updates, and also addresses jobs/housing balance issues by emphasizing job growth in the North County and housing growth in the South County.

EMFAC2014 results indicated that Scenario 3 would perform similarly to the adopted 2013 RTP-SCS Preferred Scenario, but would achieve even greater projected per capita GHG reductions versus the year 2005 baseline: -13.3% in 2020 and -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario versus -10.5% in 2020 & -14.9% in 2035 for the adopted Preferred Scenario (see Table 1). Stated differently, the preliminary TOD/Infill with Enhanced Transit Strategy scenario decreased per capita CO_2 emissions by an additional 2.8% for 2020 and 3.0% by 2035 compared to the adopted 2013 RTP-SCS preferred scenario. Reasons for the improved performance versus the 2013 RTP-SCS include lower interregional trip VMT as a result of SCS adoption and implementation in neighboring SLOCOG and SCAG regions, changes to the underlying transit routes and frequencies, changes to the constrained transportation project lists, minor changes to land use assumptions and growth allocation, recoding in the regional travel demand model of segments of U.S. 101 between unincorporated Santa Maria and the Gaviota Coast from a Principal Arterial to a Freeway, and EMFAC 2014.

In discussing ARB's intention to update the greenhouse gas reduction targets with SBCAG based on preliminary modeling results, ARB staff indicated openness to considering a range of projected emissions reductions to account for different parameters. SBCAG staff has explored two different parameters within the travel demand model that inform projected reductions. These two parameters include:

1. Revisiting the jobs/housing balance assumptions in the preliminary TOD/Infill with Enhanced Transit Strategy scenario in light of actual growth trends informed by SBCAG's report on Development Trends & RTP-SCS Implementation Progress.[1] This scenario variation continues to concentrate growth within transit corridors, but places fewer jobs in the Lompoc and Santa Maria Valleys and less housing on the South Coast market area. This review of development trends indicates that since the 2013 RTP-SCS adoption, a larger proportion of both residential and non-residential development has continued to occur in the North County than on the South Coast. However, compared to past trends, the rate of future residential development in the South Coast has increased, providing more opportunities for local workers. Although the preferred scenario continues to assume aggressive correction of jobs-housing imbalance consistent with underlying allowable land uses, the actual allocation of future growth is dependent on variables such land values and similar econometric factors that are beyond SBCAG's control. While their interplay with auto operating costs is complex, housing affordability and land values will continue to play an important role in the location decisions of households and firms. Further, these factors may inhibit realization of the adopted RTP-SCS preferred scenario growth allocation, as so far borne out by the Development Trends & RTP-SCS Implementation Progress Report. The modeling results of this scenario variation are shown in Table 2.

2. Additionally, reducing automobile operating costs by 30% for target year 2035 (13.951¢/mile vs 19.93¢/mile) to reflect the significant increases in fuel efficiency assumed in ARB's Mobile Source Strategy.[2] This reduction is based on discussions with SCAG modeling staff and is shown in Table 3.

Allocating fewer jobs to the Lompoc/Santa Maria Valleys and less housing on the South Coast market area results in per capita GHG emission reductions of -10.9% in 2020 and -15.9% in 2035 versus -13.3% in 2020 & -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario. Stated differently, the jobs/housing scenario variation increases per capita CO_2 emissions by 2.4% for 2020 and 1.8% by 2035 compared to the preliminary TOD/Infill with Enhanced Transit Strategy scenario.

Building on the jobs/housing allocation scenario variation, the additional 30% reduction in auto operating costs for target year 2035 results in per capita GHG emission reductions of -14.9% versus -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario. Stated differently, the jobs/housing scenario variation increases per capita CO_2 emissions by 2.8% for 2035 compared to the preliminary TOD/Infill with Enhanced Transit Strategy scenario.

Based on the results from the above testing, SBCAG staff believes that the range of projected per capita CO_2 emissions reductions versus the year 2005 baseline should be between -10.9% to -13.3% for target year 2020 and between -14.9% to -17.7% for target year 2035. SBCAG staff believes that this stated range is defensible when taking into account the uncertain nature of future modeling tools, demographics, and market forces, among other factors.

[1] http://meetings.sbcag.org/Meetings/SBCAG/2016/06%20June/Item%207%20RTP%20SCS%20Implementation%20Progress.pdf
[2] https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf

Table 1: VMT and CO2 Per Capita Results – Updated TOD/Infill Scenario Preliminary Results vs. Adopted Scenario 3

Scenario	Units	2005	2010	2020	2035	2040
Adopted TOD/Infill Preferred Scenario (EMFAC2011 & EMFAC2014)						
VMT Total	Vehicle Miles	9,406,707	9,052,017	9,444,018	10,302,621	10,513,881
VMT/Capita	Vehicle Miles/Person	22.53	21.35	21.72	20.75	20.66
CO_2 per Capita (EMFAC2011)	Pounds per day	18.40	17.23	16.46	15.57	--
% Change from 2005		--	--	-10.5%	-15.4%	--
CO_2 per Capita (EMFAC2014)	Pounds per day	18.35	17.32	16.42	15.65	--
% Change from 2005		--	--	-10.5%	-14.7%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Adopted TOD/Infill						
VMT Total	Vehicle Miles	325,589	313,311	-12,493	33,545	80,875
VMT/Capita	Vehicle Miles/Person	0.78	0.74	-0.03	0.07	0.16
CO_2 per Capita (EMFAC2014)	Pounds per day	0.42	0.53	-0.14	-0.21	--
% Change from 2005		--	--	-2.80%	-3.00%	--

Table 2: CO_2 Per Capita Results – Preliminary Scenario 3 w/ Jobs-Housing Variation vs. Updated TOD/Infill Scenario Preliminary Results

Scenario	Units	2005	2010	2020	2035	2040
Preliminary Scenario 3 w/ Jobs-Housing Variation (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,669,525	10,546,957	10,726,970
VMT/Capita	Vehicle Miles/Person	23.31	22.09	22.24	21.24	21.08
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.73	15.79	--
% Change from 2005		--	--	-10.9%	-15.9%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Preliminary Scenario 3 w/ Jobs-Housing Variation						
VMT Total	Vehicle Miles	0	0	-238,000	-210,791	-132,214
VMT/Capita	Vehicle Miles/Person	0	0	-0.55	-0.42	-0.26
CO_2 per Capita (EMFAC2014)	Pounds per day	0	0	-0.45	-0.35	--
% Change from 2005		--	--	-2.40%	-1.80%	--

Table 3: CO_2 Per Capita Results – Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs vs. Updated TOD/Infill Scenario Preliminary Results

Scenario	Units	2005	2010	2020	2035	2040
Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,669,525	10,660,166	10,832,218
VMT/Capita	Vehicle Miles/Person	23.31	22.09	22.24	21.47	21.29
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.73	15.98	--
% Change from 2005		--	--	-10.9%	-14.9%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs						
VMT Total	Vehicle Miles	--	--	-238,000	-324,000	-237,462
VMT/Capita	Vehicle Miles/Person	--	--	-0.55	-0.65	-0.47
CO_2 per Capita (EMFAC2014)	Pounds per day	--	--	-0.45	-0.54	--
% Change from 2005		--	--	-2.40%	-2.80%	--