



S A C O G

Item #08-11-15
Consent

SACOG Board of Directors

November 5, 2008

Authorize Submission of Grant Application for U.S. EPA Grant for Climate Enhancements to the I-PLACE³S Model

Issue: Whether SACOG should apply to the U.S. EPA STAR (Science to Achieve Results) Program to fund the development of a CO₂ and greenhouse gas emissions model in I-PLACE³S.

Recommendation: The Climate & Air Quality Committee recommends that the Board authorize the Executive Director to apply for the U.S. EPA Grant.

Committee Action/Discussion: SACOG has the opportunity to partner with Lawrence Frank and Company (LFC), a transportation, land use and air quality consultant, in the research and development of a model that would estimate change in mobile source emissions (CO₂, NO_x and VOC) from changes to the built environment. This research would then be incorporated into the I-PLACE³S model and used in future SACOG land use, transportation, air quality, and climate change studies.

LFC has a long track record of conducting policy relevant research and has been a leader in the assessment of how the design of communities impacts environmental related outcomes. Recently, SACOG partnered with LFC in developing a prototype greenhouse gas emissions model, which was pilot tested on a neighborhood in King County, Washington.

The proposed project has two objectives:

- 1) Evaluate the relationships between specific modifiable community design features, travel behavior and resulting mobile source emissions;
- 2) Integrate results from the first objective to I-PLACE³S, creating the ability to estimate mobile source emissions as an outcome of land use and transportation changes.

Data development and analysis will be conducted by LFC for at least six regions (Atlanta, GA; Baltimore, MD; Cincinnati, OH; Portland, OR; Sacramento, CA; San Diego, CA; Seattle WA; St. Louis, MO). The analysis will result in a set of factors that express the amount of change in mobile source emissions associated with change in the built environment. The Center for Clean Air Policy will be contracted to provide focused technical and outreach review/assistance throughout the project. A Technical Review Panel, comprised of experts in land use, travel and vehicle emissions modeling, will provide peer review and guidance on the technical elements of the study. The grant would also fund programming of the model results into I-PLACE³S by EcoInteractive, Inc., the firm that currently maintains the I-PLACE³S website. SACOG will oversee the integration of the data and models into I-PLACE³S and lead a series of case studies of the new module in some of these regions.

If awarded, the grant will award a total of \$600,000 (no local match required) to the SACOG research team for a period of three years (July 2009–2012). SACOG would receive \$198,000. The remainder would be awarded to the above-listed entities to conduct the data development, research, and programming. Due to the timing of the grant cycle and the application deadline, staff had to submit the grant application in advance of Board approval. However, staff seeks Board direction on whether or not to follow through on the proposal.

Approved by:

Mike McKeever
Executive Director

MM:JPC:ts

Attachments

Key Staff: Gordon Garry, Director of Research & Analysis, (916) 340-6230
Jason Crow, Senior Planner, (916) 340-6219
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ABSTRACT

Project Title: Climate Enhancements to the I-PLACE3S Model

Investigators (Multiple PI application):

- Contact PI: Gordon Garry, Director of Research and Data Analysis, Sacramento Area Council of Governments / ggarry@sacog.org / (916) 340-6230
- Co-PI: Dr. Lawrence D. Frank, Bombardier Chair of Sustainable Transportation, University of British Columbia; President, Lawrence Frank and Company

Institution:

- Applicant Institution: Sacramento Area Council of Governments, Sacramento, CA
- Lawrence Frank and Company, Seattle, WA

Project Period and Location:

- Project Period: Three years (July 1 2009 - July 1 2012)
- Locations: Data analysis of at least six the following regions: Atlanta, GA; Baltimore, MD; Cincinnati, OH; Portland, OR; Sacramento, CA; San Diego, CA; Seattle WA; St. Louis, MO.

Project Cost: \$600,000

Project Summary

Study Objectives. The proposed project has two objectives: 1) Evaluate the relationships between specific modifiable community design features, travel behavior and resulting mobile source carbon dioxide (CO₂), Oxides of Nitrogen (NO_x), and Volatile Organic Compound (VOC) emissions. 2) Integrate the results from the first objective to an existing parcel-level web-based scenario planning tool (I-PLACE3S), creating the ability to estimate mobile source emissions as an outcome of land use and transportation changes.

Experimental Approach. Publicly available parcel level land use datasets are the primary source of the built environment (independent) variables for the analysis. Trip level regional travel survey and travel model data are used to estimate CO₂, NO_x and VOC emissions (dependent variables). Emissions estimates are mode and speed sensitive and are created at the road-link level. The research team already has obtained, cleaned and further developed an unprecedented amount of data in the regions proposed for the analysis, although some additional secondary data collection and development will be necessary. Once data development is complete, mobile source emissions will be correlated to built environment factors. We will consider creating a single aggregated dataset capable of being analyzed using hierarchical linear modeling. Significant model variables and their multipliers will be integrated into I-PLACE3S along with related functionality and user interface enhancements.

Expected Results. The analysis will result in a set of factors that express the amount of change in mobile source emissions associated with a change in the built environment. The enhanced I-PLACE3S model will support forecasting, planning and decision-making by estimating changes in emissions in response to urban planning and policy decisions. It will also support CO₂ goal-setting and monitoring by estimating the extent of changes in land use and transit service that would be needed to reach goals for CO₂ reduction.

Supplemental Keywords. Greenhouse gases, atmosphere, pollution prevention, sustainable development, modeling, monitoring, transportation, demand reduction

COST CATEGORIES	YEAR ONE		YEAR TWO		YEAR THREE		TOTAL PROJECT	
	Federal	Cost-Share	Federal	Cost-Share	Federal	Cost-Share	Federal	Cost-Share
a. Personnel								
Principal Investigator (PI) - Gordon Garry	\$7,000		\$1,500		\$5,000		\$13,500	\$0
Co-PI							\$0	\$0
Graduate Students							\$0	\$0
Other Personnel	\$26,631		\$14,707		\$19,311		\$60,649	\$0
TOTAL PERSONNEL	\$33,631	\$0	\$16,207	\$0	\$24,311	\$0	\$74,149	\$0
b. Fringe Benefits								
59% of Personnel	\$19,842		\$9,562		\$14,343		\$43,748	\$0
c. Travel								
Annual Trip to EPA STAR Meeting (1 person)	\$1,750		\$1,750		\$1,750		\$5,250	\$0
Review Panel Travel	\$2,500				\$2,500		\$5,000	\$0
Technical Work Sessions	\$1,500		\$2,200		\$1,050		\$4,750	\$0
TOTAL TRAVEL	\$5,750	\$0	\$3,950	\$0	\$5,300	\$0	\$15,000	\$0
d. Equipment (items ≥ \$5000)								
Item 1							\$0	\$0
Item 2							\$0	\$0
Item 3							\$0	\$0
TOTAL EQUIPMENT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
e. Supplies								
Item 1							\$0	\$0
Item 2							\$0	\$0
Item 3							\$0	\$0
TOTAL SUPPLY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
f. Contracts								
LFC	\$85,000		\$147,500		\$35,000		\$267,500	\$0
EcoInteractive	\$10,000		\$50,000		\$15,000		\$75,000	\$0
Mark Bradley	\$7,500		\$7,500		\$7,500		\$22,500	\$0
TOTAL CONTRACTUAL	\$102,500	\$0	\$205,000	\$0	\$57,500	\$0	\$365,000	\$0
g. Other								
CCAP	\$10,000		\$10,000		\$5,000		\$25,000	\$0
Review Panel Stipends	\$4,000		\$4,000		\$4,000		\$12,000	\$0
Item 3							\$0	\$0
TOTAL OTHER COSTS	\$14,000	\$0	\$14,000	\$0	\$9,000	\$0	\$37,000	\$0
h. TOTAL DIRECT COSTS (sum of a – g)	\$175,723	\$0	\$248,719	\$0	\$110,454	\$0	\$534,897	\$0
i. Indirect Costs/Charges _55.22% of personnel+benefits (base)	\$29,528		\$14,230		\$21,345		\$65,103	\$0
j. TOTAL PROJECT COST (sum of h & i)	\$205,251	\$0	\$262,949	\$0	\$131,799	\$0	\$600,000	\$0
k. Total Requested From EPA	\$205,251		\$262,949		\$131,799		\$600,000	\$0