

Comparison of Greenhouse Gas Efficiency Metrics for Projects, Specific Plans, General Plans, and Climate Action Plans

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State and Local Regulation of GHGs

- EO S-3-05
 - Statewide reduction targets for 2020 and 2050
- AB 32
 - Requires ARB to reduce statewide GHG emissions to meet 2020 target (voluntary, regulatory, and market mechanisms)

State and Local Regulation of GHGs



- CEQA/Local AQMD rules
 - Local governments to consider environmental impacts of GHGs and consistency with adopted plans, policies, or regulations to reduce GHGs
 - Local governments to contribute their “fair share” towards statewide GHG reduction targets
 - ~15% below 2008 levels

Regulation of GHGs: Efficiency Metrics and Targets

- “Kyoto” GHGs are globally well-mixed pollutants
 - Quantities must be reduced (regardless of origin) to meet targets and avoid dangerous effects of climate change, while accommodating growth
 - New projects and existing infrastructure must be more GHG-efficient to meet reduction goals

Regulation of GHGs: Efficiency Metrics and Targets

- GHG efficiency metrics and targets represent per capita or per service population emissions
 - Efficiency metrics allow comparison between projects and plans of different sizes and types
 - Efficiency targets encourage efficient projects, discourage inefficient projects, even small ones

Regulation of GHGs: Efficiency Metrics and Targets

- $\text{GHG EM}_x = \text{GHG}_x / \text{SP}_x$
 - GHG EM_x = the GHG efficiency metric in year x, in MT CO₂e/SP/year;
 - GHG_x = operational GHG emissions in year x, in MT CO₂e/year; and
 - SP_x = service population (residents + employees) in year “x” (typically buildout).
- EMs were found to range from ~2.8 – 13.4 before mitigation (lower EMs resulted from design features rather than mitigation)
- Targets range from 4.6 (2020) to 2.9 (2030)

Regulation of GHGs: Efficiency Metrics and Targets

- Accurate efficiency metrics depend on accurate estimates of:
 - Operational emissions at buildout (VMT, energy use, forecasting methodology, future reductions)
 - Service population at buildout
- Accurate efficiency targets depend on accurate estimates of:
 - Statewide GHG emissions targets for the years 2020 – 2050 (i.e. the 1990 emission estimate is key)
 - Included sectors vary, depending on the project or plan
 - Statewide service population estimates (2020-2050)

Efficiency Metrics and Targets: Key Challenges and Solutions

- VMT estimation approaches for plans and projects
 - Origin-destination; ITE trip rates
 - SP estimate poses certain challenges for some projects and plans
 - Efficiency metrics should capture VMT correctly, but associated population may not be included in SP estimate (i.e. visitors).

Efficiency Metrics and Targets: Conclusions

- GHG efficiency metrics allow comparison between projects and plans of different sizes and types
- Efficiency targets encourage efficient projects and could be used as CEQA thresholds
- Standardized approaches needed to assist local governments