

EPA Voluntary Guidance on Air Quality Benefits of Land Use Policies and Projects

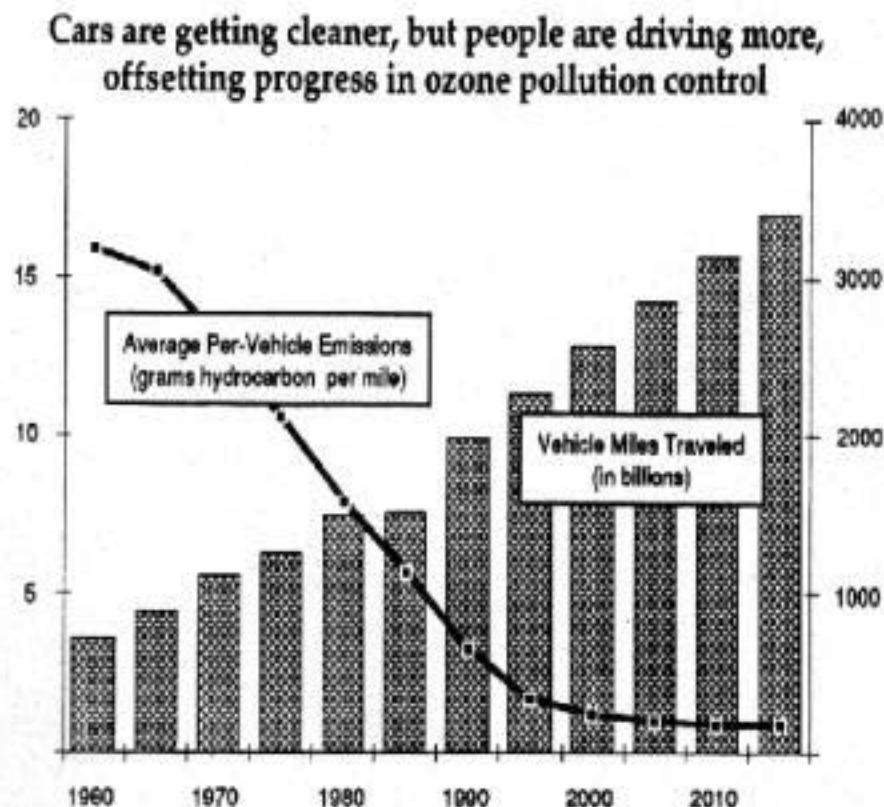


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Why consider land use as a tool to address transportation and air quality concerns?



- ® Cars are getting cleaner BUT people:
- are driving more
 - are driving further
 - have little or no access to alternative modes of transportation



VMT Growth in 10 Largest Metro Areas (FHA, 1982-96)

*60% VMT in cities < 500,000

- **New York/NE New Jersey** **39.85%**
- **Los Angeles** **52.83%**
- **Chicago/NW Indiana** **79.47%**
- **Philadelphia** **41.47%**
- **San Francisco/Oakland** **50.87%**
- **Detroit** **46.70%**
- **Washington, DC** **77.94%**
- **Houston** **54.36%**
- **Boston** **31.44%**
- **San Diego** **83.82%**



Induced Travel from Highway Infrastructure (EPA literature review, 1999)

- ✧ **50 states, 70 major metro areas:**
 - Induced VMT = 10%-30% of historical VMT
 - Short term: 10% increase regional highway capacity = 2-5% VMT increase in 1-2 years
 - Long term: 10% increase in highway capacity = 5-10% increase in VMT over 10-20 years



Long-term Effects of Induced VMT from Highway Infrastructure

- Changes in household auto ownership
- Changes in development location, pattern
 - Residential location, proximity to service areas
 - Employee work location
 - Employer business location



The Link between Land Use, Transportation, and Air Quality

✍ Relationship can be represented as:

1. Land Use Activities (planning, policies, develop projects) τ
2. Changes in Land Use / Urban Form τ
3. Changes in Travel (e.g., trip length, trip frequency, mode choice) τ
4. Changes in Vehicle Emissions



Summary of Land Use Guidance

- ✧ Provides several options for accounting for land use activities in the air quality and transportation planning processes
- ✧ Guidance serves as a voluntary tool for States that choose to use land use activities as strategies for reducing mobile source emissions



What the Guidance Offers States

- ④ Makes clear the connection between development patterns, transportation, and air quality
- ④ Provides an incentive for States to further Smart Growth goals by showing benefits through the air quality and transportation planning processes
- ④ Provides a voluntary tool to allow States to account for beneficial actions already happening in their communities



Why EPA developed this Guidance

- ⊗ **1998 Background Information for Land Use SIP Policy:**
 - States requested that EPA:
 - Provide guidance to support their efforts to implement land use activities as emission control strategies
 - Provide Best Practices
 - Provide flexible ways to achieve cleaner air

- ⊗ **2000 White House Report, “Building Livable Communities: Sustaining Prosperity, Improving Quality of Life, Building a Sense of Community”:**
 - Report defined Federal roles as:
 - » Providing Incentives
 - » Getting rid of Federal Barriers/Disincentives
 - » Providing Information



Example land use strategies

- ® Infill Development
- ® Mixed Use Development
- ® Parking management policies
- ® Transit oriented development projects
- ® Urban Growth Boundaries



Examples of Local Land Use Planning

- ® **Monterey Bay Area, CA**
 - Regional policies to promote mixed land uses, transit supportive density, pedestrian/ bike friendly designs and transit access
- ® **Baltimore, MD**
 - MD Smart Growth Initiative – targets State funding and economic development to areas determined by local governments to be growth areas – E.g “Live Near Your Work”
- ® **Orencia Station, OR**
 - Pedestrian/Transit oriented community –town center on Portland light rail line



Clean Air Act Policies for Receiving Credit

- ⌘ State Implementation Plans (SIPs) - Detailed description of the programs a State will use to carry out its responsibilities under the Clean Air Act
- ⌘ Conformity - Clean Air Act provision that requires federally supported transportation investments to be consistent with the emissions targets in SIPs



Comparing VMT and Emissions of Infill Site vs Greenfield Site

	Baltimore	Dallas	Atlanta	Chicago
VMT Increase at Greenfield	55%	38%	50%	0%
NOx increase	40%	15%	72%	0%
VOC increase	36%	38%	277%	0%

Policy Options v. Base Case

(EPA/Sacramento, 2000)

Policy Options	Relative Change in VMT	Relative Change in Emissions
Pricing & Light Rail	-3.2%	-4.9%
TOD, Light Rail, Advanced Transit	-3.9%	-6.1%
Pricing, TOD, Light Rail, Advanced Transit	-9.2%	-12.1%



Quantification Guidance

- Ⓜ **First document focuses on infill developments**
 - “Comparing Methodologies to Assess Transportation and Air Quality Impacts of Brownfields and Infill Development”
 - Builds on 1998 EPA Infill study
 - Test sites include Dallas, Chicago, Baltimore, and Atlanta
 - 4 methods provided
 - Final Report to be released in December, 2001
 - An EPA guidance memo will be attached
- Ⓜ **Future quantification studies planned for:**
 - transit oriented developments
 - mixed use development



Guidance describes 3 ways to account for air quality benefits of land use policies and projects

1. In a State Implementation Plan (SIP's) initial forecast of future emissions

- Future impacts of beneficial land use activities are modeled for the SIP to reduce the amount of emissions controls needed

2. As a SIP control strategy

- Specific land use activities that reduce driving trips and distances, or encourage alternative modes (e.g., walking, biking, mass transit) can be considered air quality control strategies
 - traditional control strategy
 - Voluntary Measure
 - Economic Incentive Program

3. In a Conformity Demonstration without including it in a SIP

- If a SIP has already done, future impacts of land use activities can be modeled for the conformity determination



Option 2-Off Model credits





Voluntary Mobile Source Emission Policy

- ⌘ Encourage innovation
- ⌘ 3% maximum credit
- ⌘ No specific “backstops”
- ⌘ EPA has limited experience in application

⌘ **CONTACT REGION
EARLY/OFTEN**



Research and Methodology Development

® Quantification efforts complete

- .Infill/Brownfield Quantification--release in Spring, 2001
- .Induced travel--quantification piece released in Winter, 2001

® Ongoing Efforts

- Transit Oriented Development methodologies--release in Fall, 2001
- Mixed use developments
- Parking management strategies
- Induced development

® Related modeling work

- EPA Office of Policy Smart Growth Index model status and pilots
- EPA Office of Research and Development guidance on land use models for local planning
- UC Davis study of regional-scale modeling options in Sacramento
- ITE Trip generation report
- DOT work on microscale modeling