

Potential Conflicts Between Air Quality Mitigations and Smart Growth Location & Land Use Mix

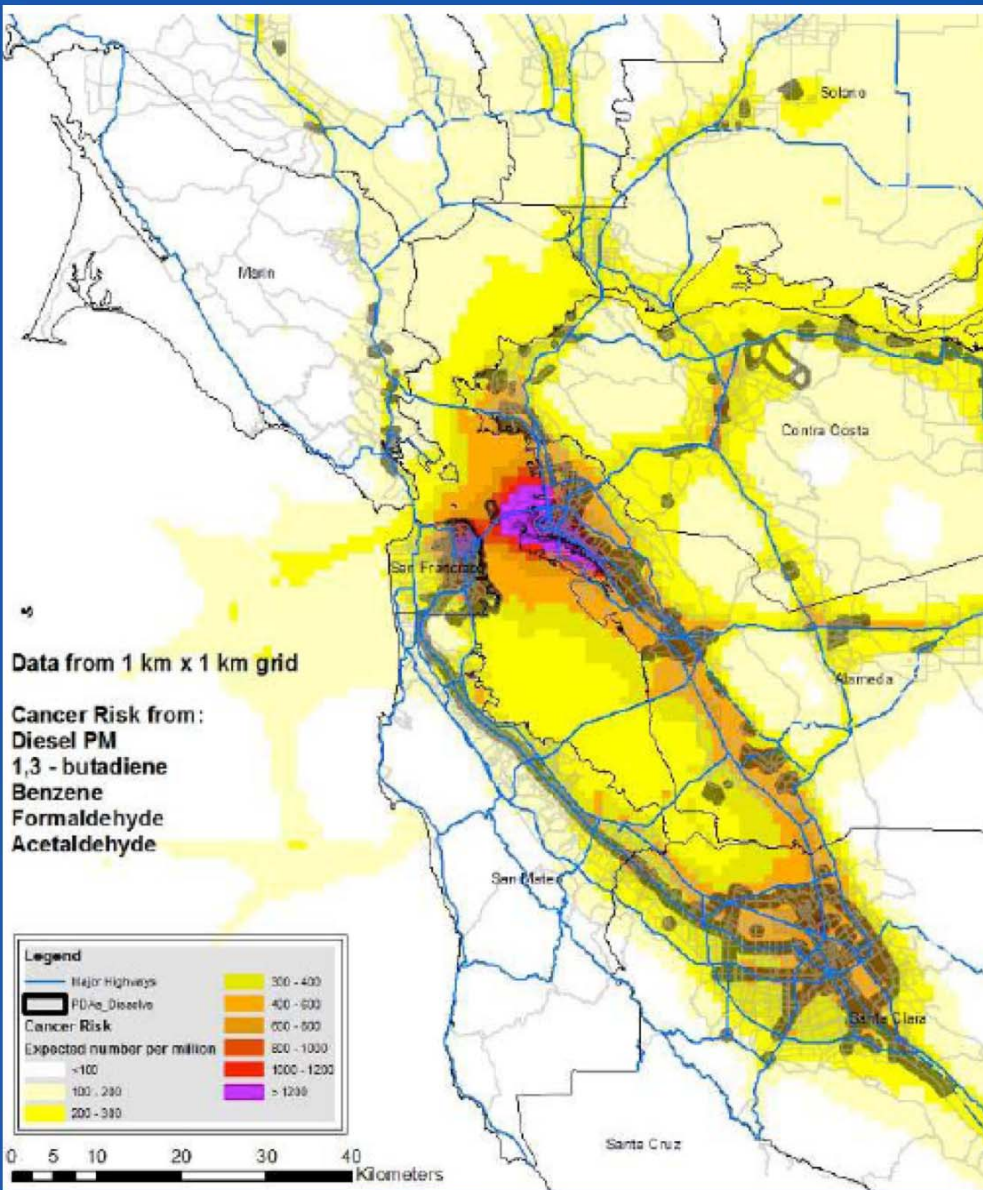
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Presentation Outline

- Guidance on potential mitigation
- Site design
 - Use of trees as “filter”
 - Location of sensitive uses within a mixed use development
- Relationship to Smart Growth and TOD Projects

Proximity to Emitters



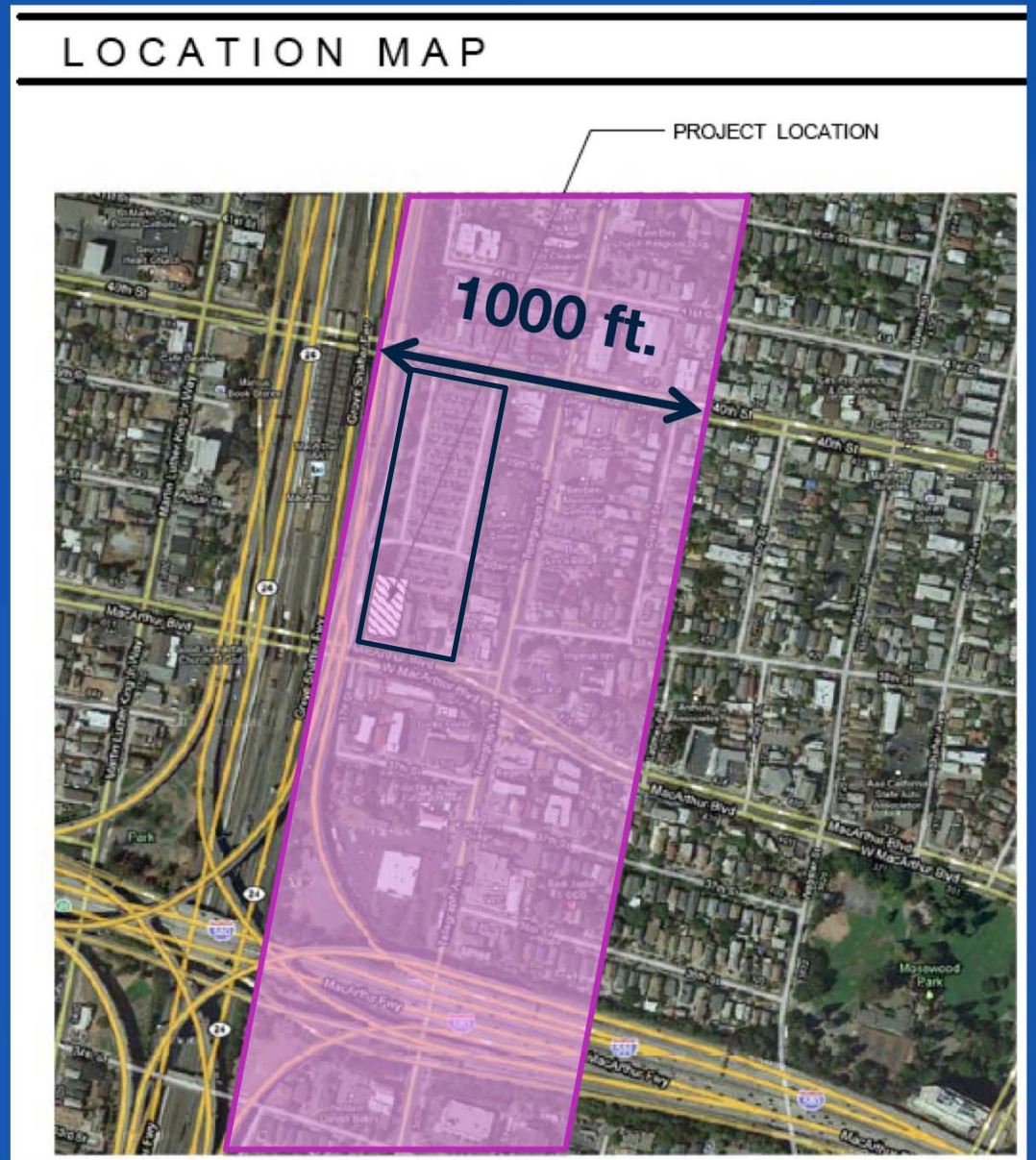
- Bay Area Air Quality Management District (BAAQMD)
- Screening for impacts
- Potential conflict with regional goals for Priority Development Areas in proximity to jobs and transit

BAAQMD Suggested Mitigations

- Increase distance from roadways
- Redesign to locate sensitive receptors away from roadways
- Phase to build commercial/retail first and residential later to allow time for new CARB diesel standards to take effect
- Install tiered planting buffer of evergreen landscaping
- Install and maintain air filtration system on buildings
- Locate air intakes and operable windows away from roadway

BAAQMD Guidelines & TOD Projects

- MacArthur BART Transit Village



BAAQMD Guidelines & TOD Projects

- MacArthur BART Transit Village



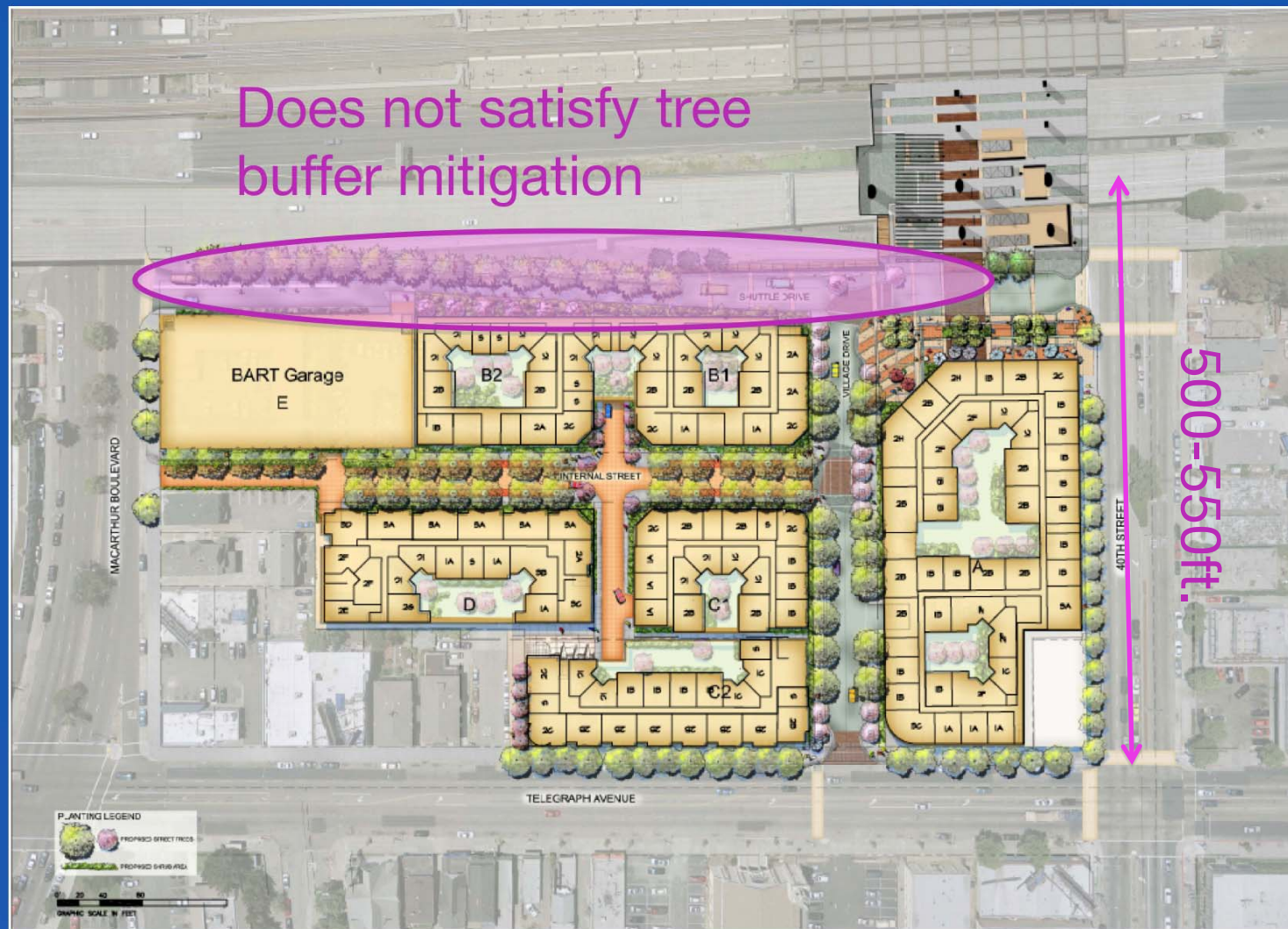
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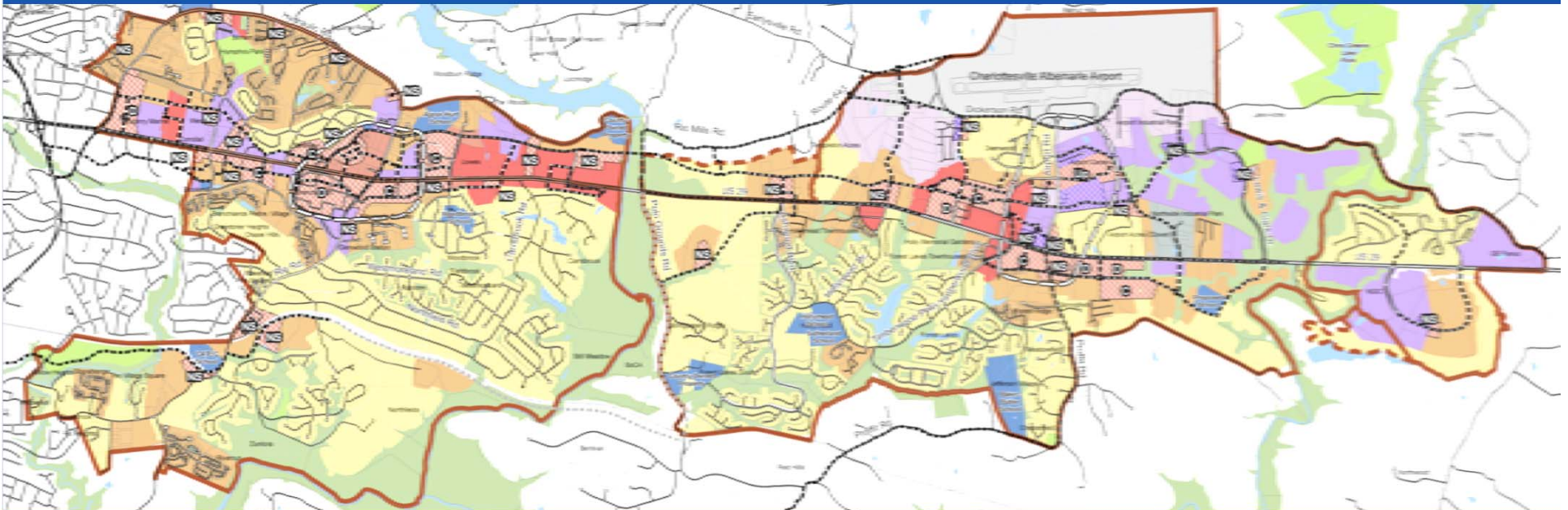
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BAAQMD Guidelines & Large Projects

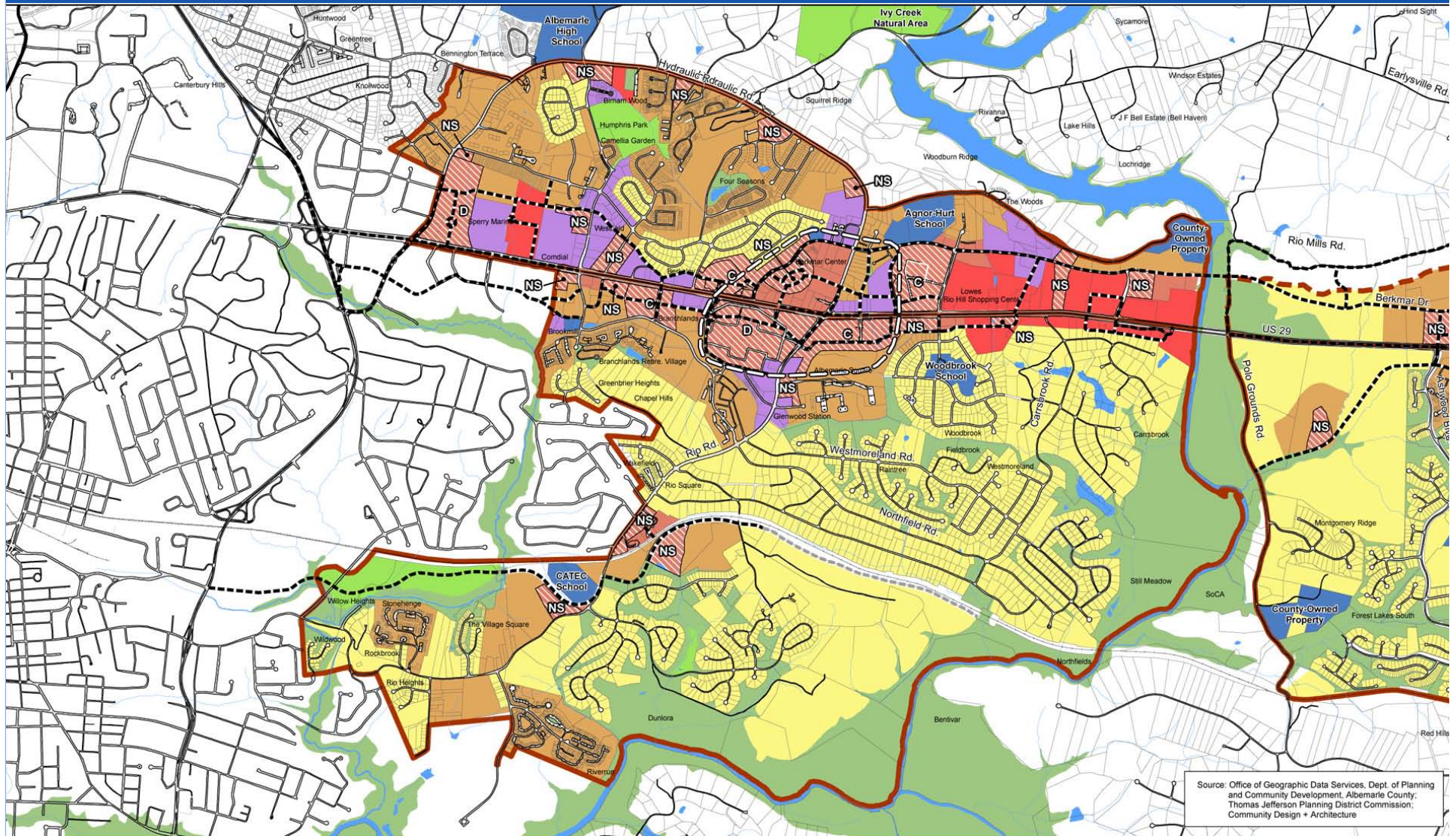
- Places29 in Albemarle County outside of Charlottesville, VA
- How would application of BAAQMD Guidelines affect this plan? :



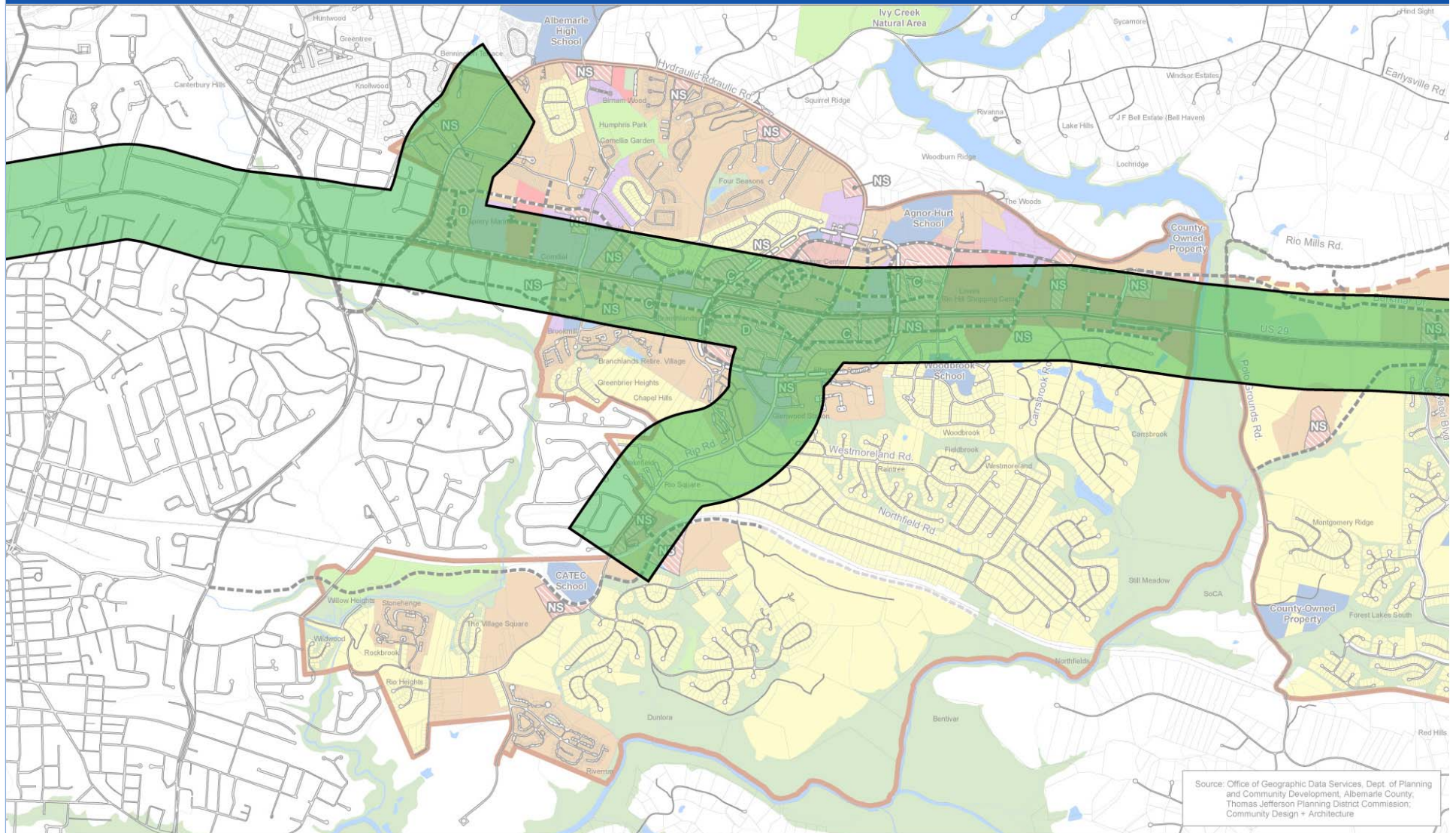
Primarily Infill

Primarily New Growth

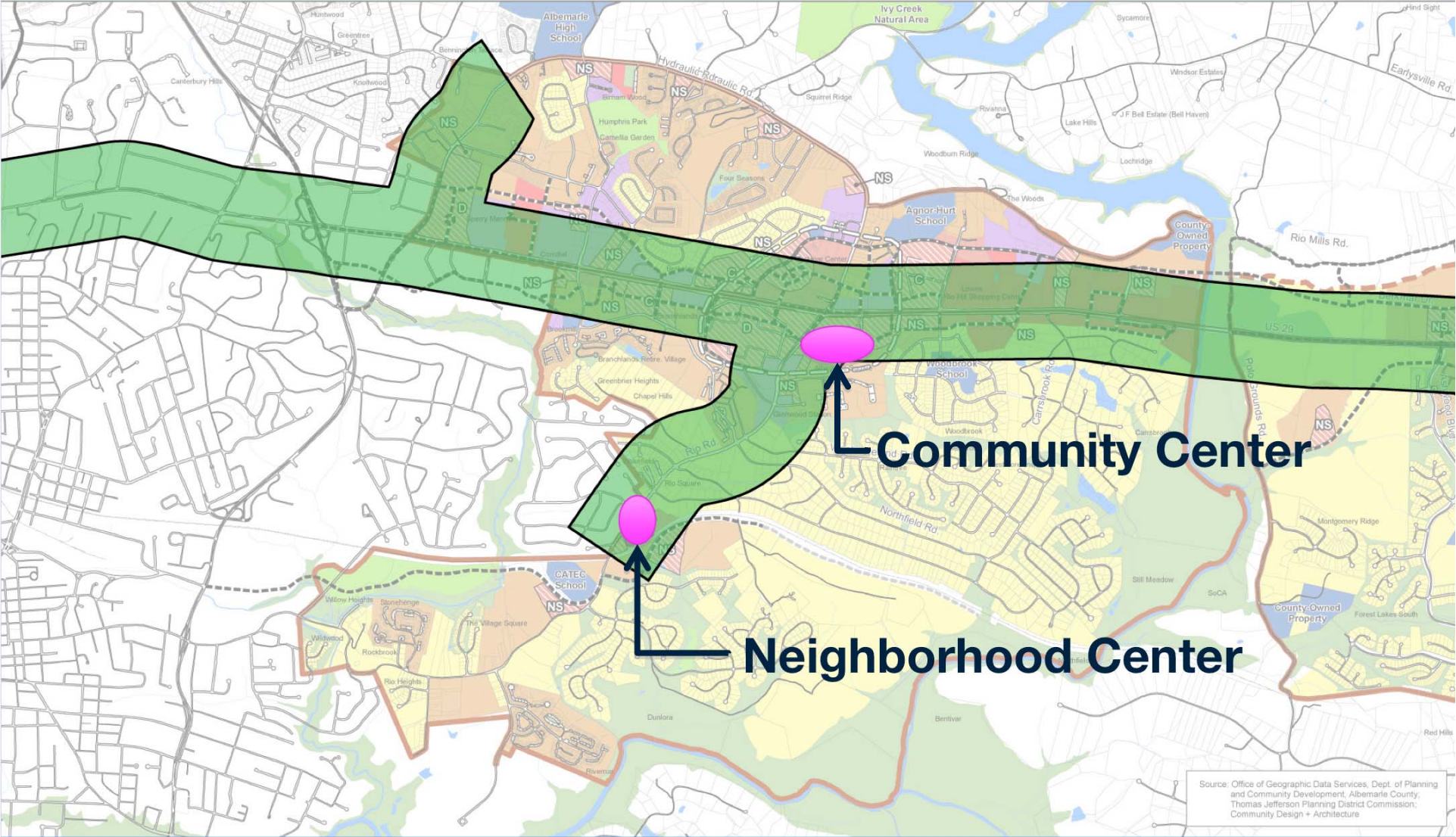
Southern Infill Area



Overlay zone



BAAQMD Guidelines & Large Projects



Community Center

- Reuse of shopping center



New Partners – Charlotte
February 5, 2011

Design Responses to Particulate Air Quality

COMMUNITY DESIGN + ARCHITECTURE
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Community Center

- Mix of residential, retail, & office



Urban Advantage

New Partners – Charlotte
February 5, 2011

Design Responses to Particulate Air Quality

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REGION • CITY • NEIGHBORHOOD • BUILDING

Neighborhood Center

- Reuse of strip retail



Urban Advantage

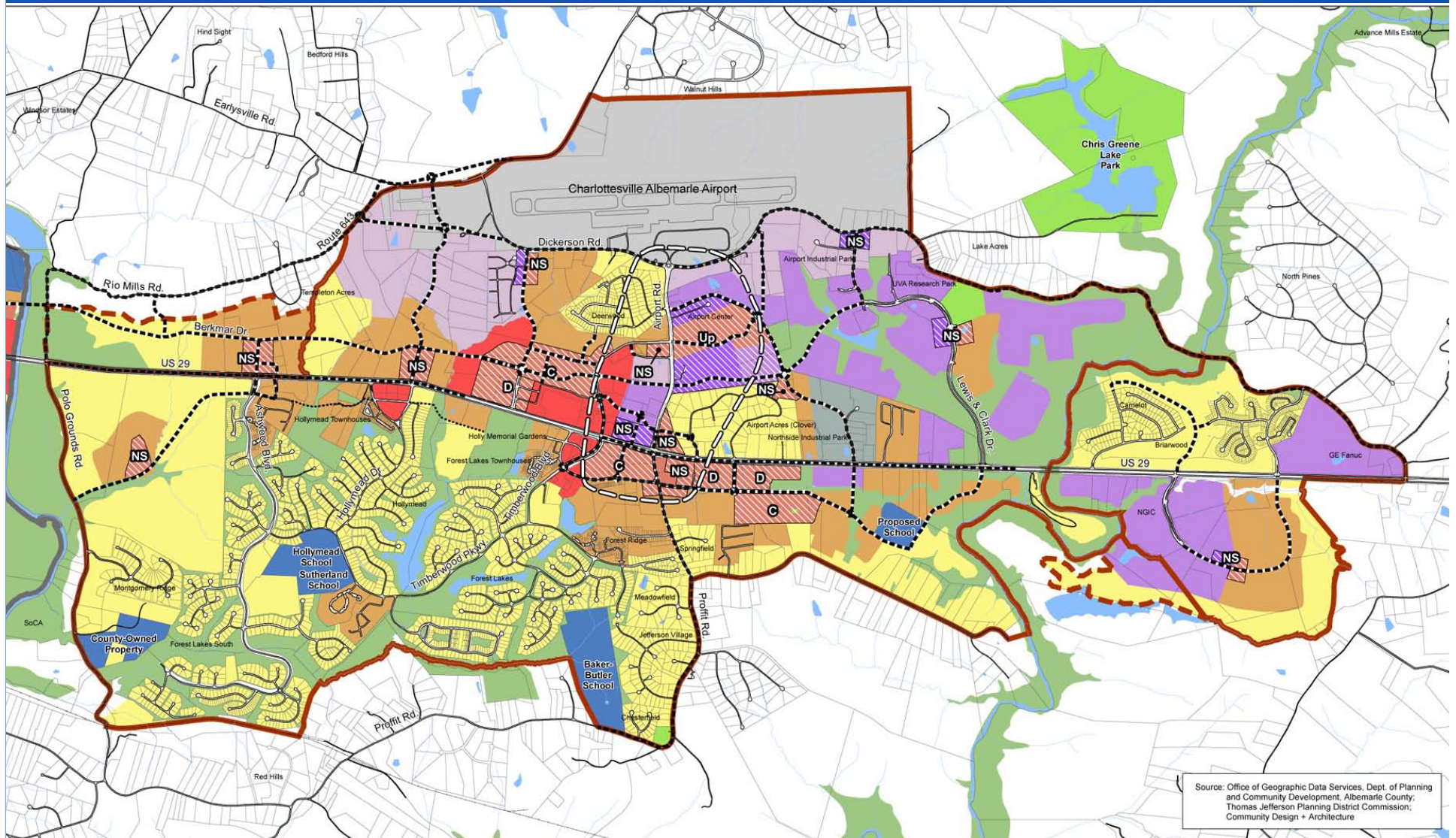
Neighborhood Center

- Convenience retail, professional office, and residential



Urban Advantage

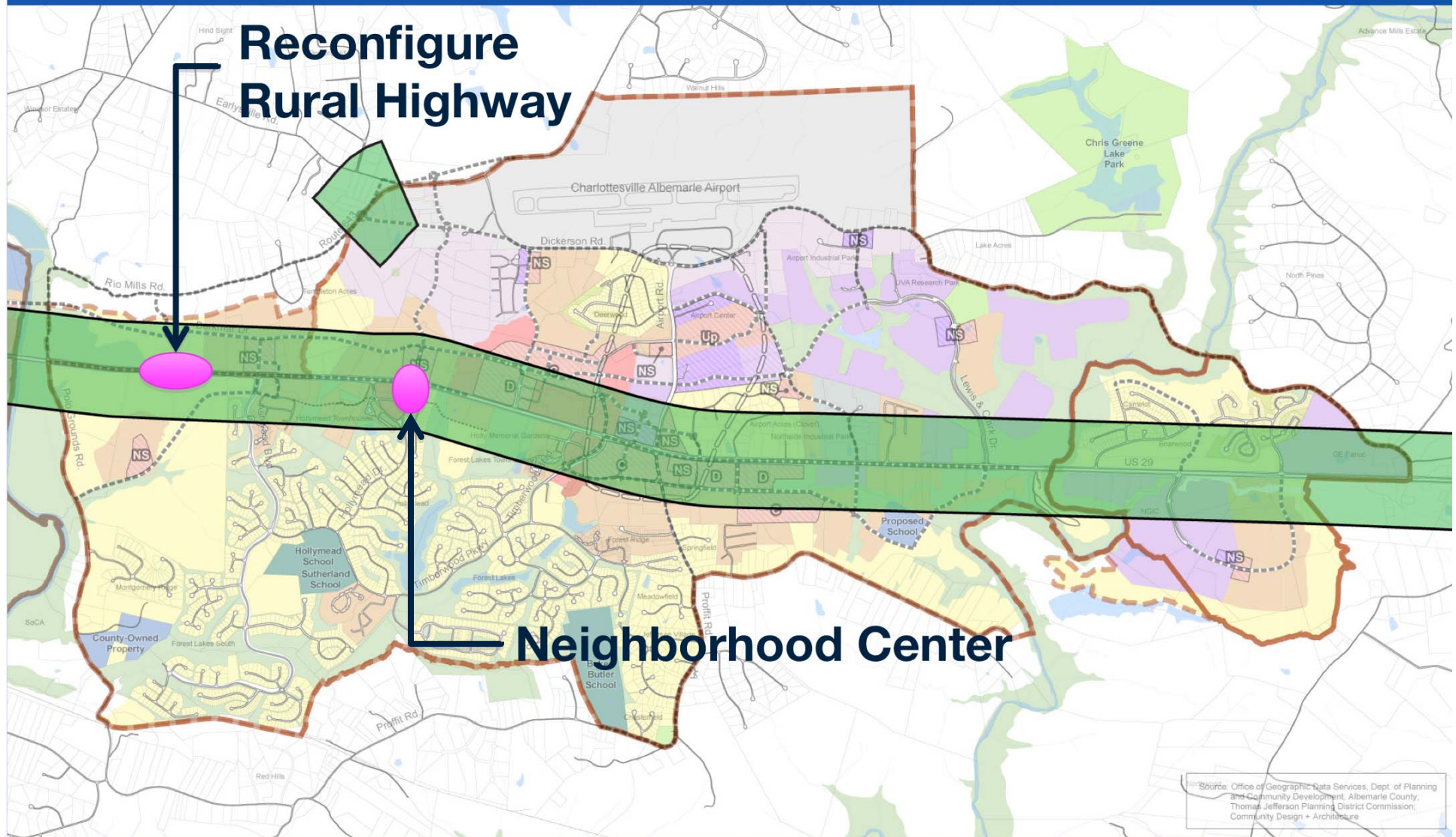
BAAQMD Guidelines & Large Projects



Source: Office of Geographic Data Services, Dept. of Planning and Community Development, Albemarle County; Thomas Jefferson Planning District Commission; Community Design + Architecture

COMMUNITY DESIGN ARCHITECTURE
REGION • CITY • NEIGHBORHOOD • BUILDING

BAAQMD Guidelines & Large Projects



Create a Multi-Modal Highway

- Existing Rural Highway through future development area



Urban Advantage

Create a Multi-Modal Highway

- Reconfigured highway with —
 - Mixed use neighborhoods beyond buffer
 - Multi-use path “too close” to roadway?



Urban Advantage

Create Neighborhood Centered Pattern

- Transform suburban and rural environment



Urban Advantage

Create Neighborhood Centered Pattern

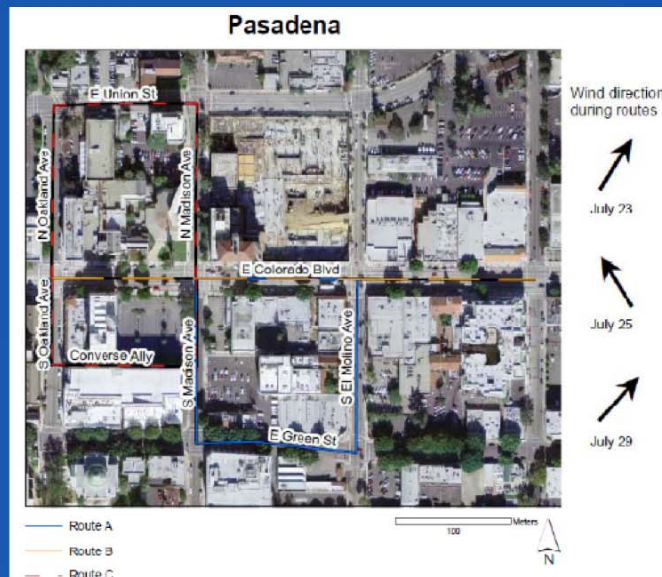
- Transform suburban and rural environment



Urban Advantage

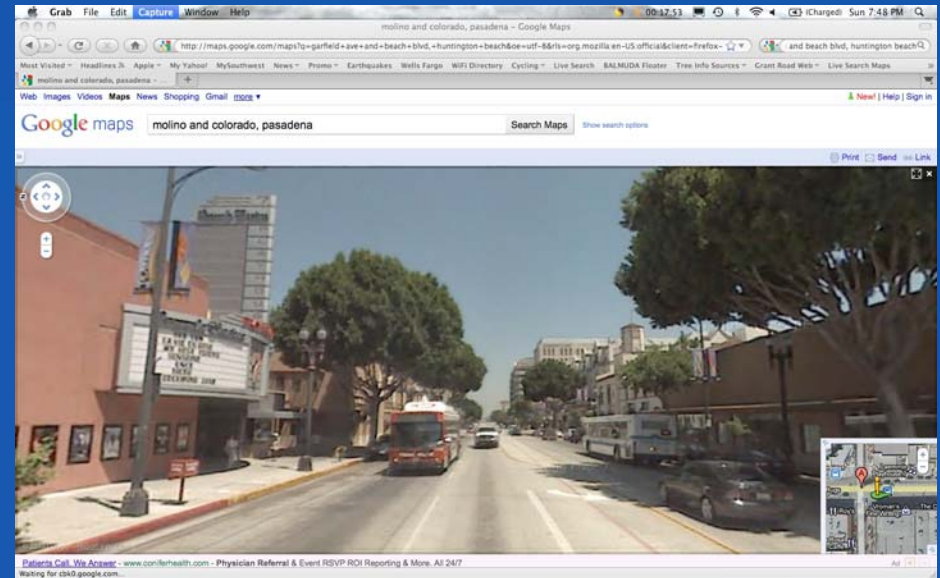
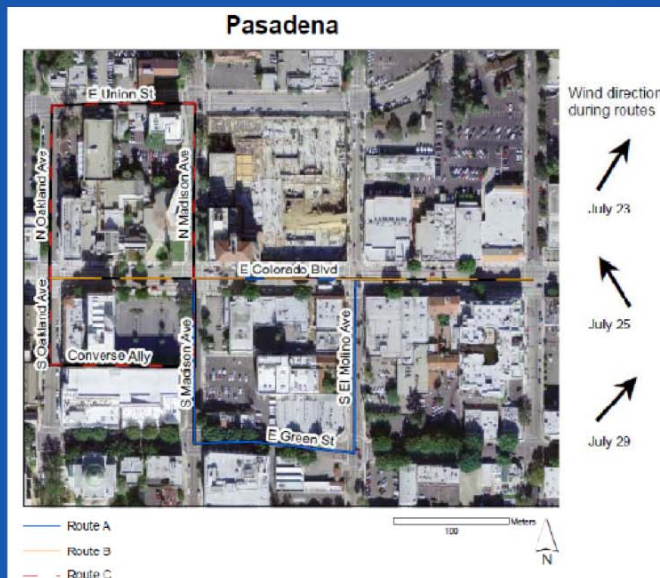
Buildings and Windflow

- “Fine Particulate Concentrations Near Arterial Streets: The Influence of Building Placement and Wind Flow”
 - Study by Boarnet, Ferguson, Edwards, Princevac, Bartolome, Pan through the University of California Transportation Center, UCTC-FR-2010-24



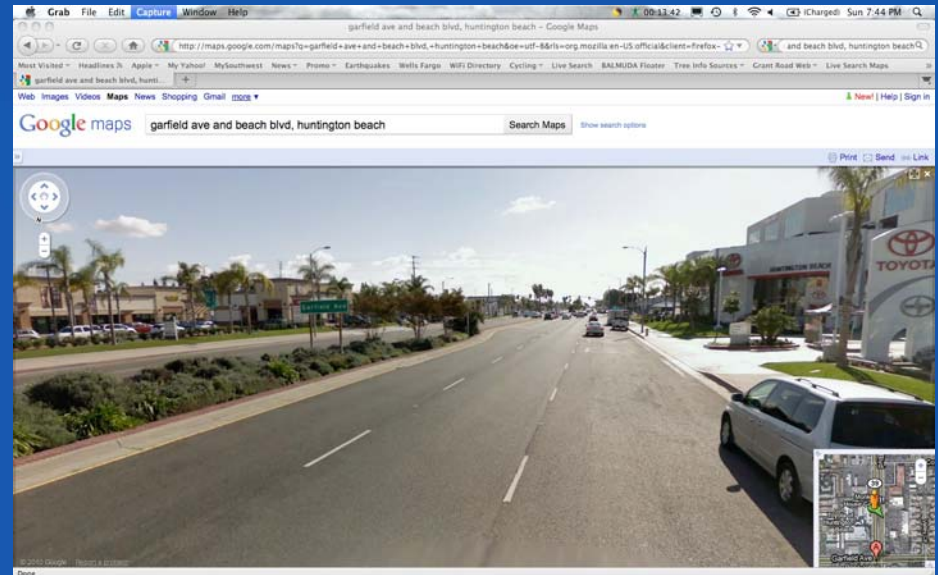
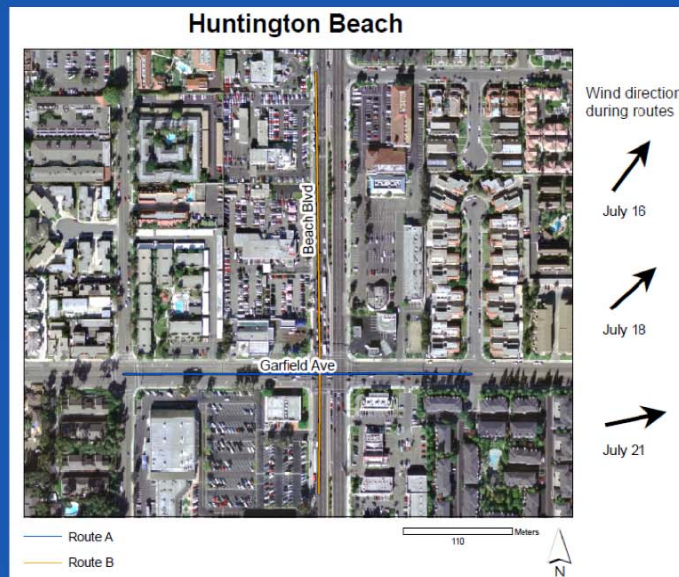
Buildings and Windflow

- Studied 5 roads with ADT > 40,000 (twice the BAAQMD screening level)
- More compact areas tended to have higher particulate levels



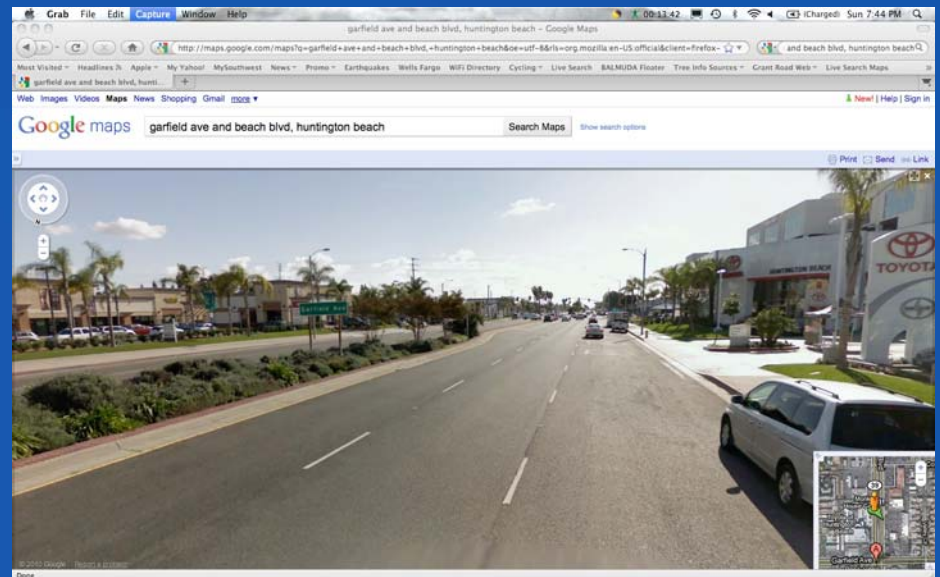
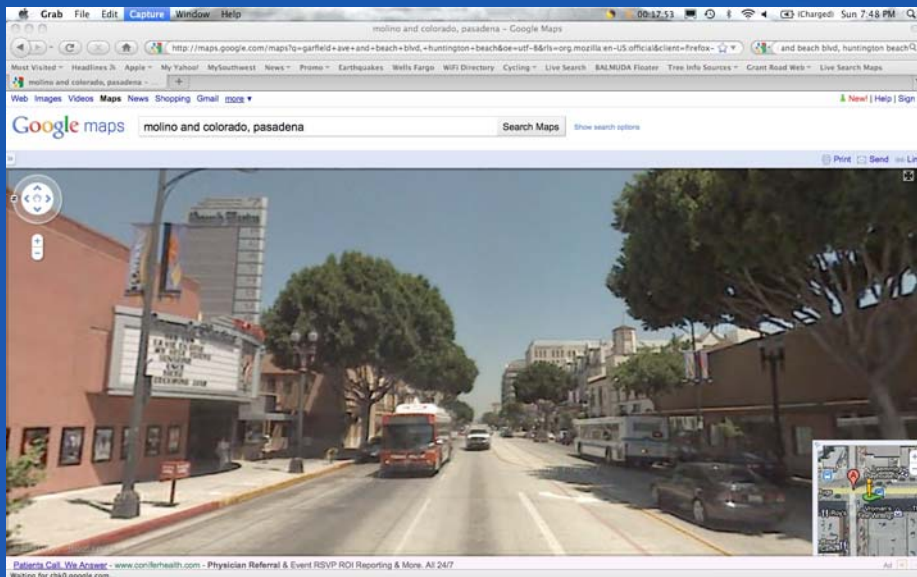
Buildings and Windflow

- Studied 5 roads with ADT > 40,000 (twice the BAAQMD screening level)
- Combination of building location & wind direction show evidence of concentrating particulates mainly on the lee side of buildings



Buildings and Windflow

- Authors believe more study is needed of
 - Building placement and windflow
 - Potential relationship to compact development
 - Impact studies should consider more comprehensive assessment of public health costs and benefits
 - Reduction in VMT as well as exposure to particulates

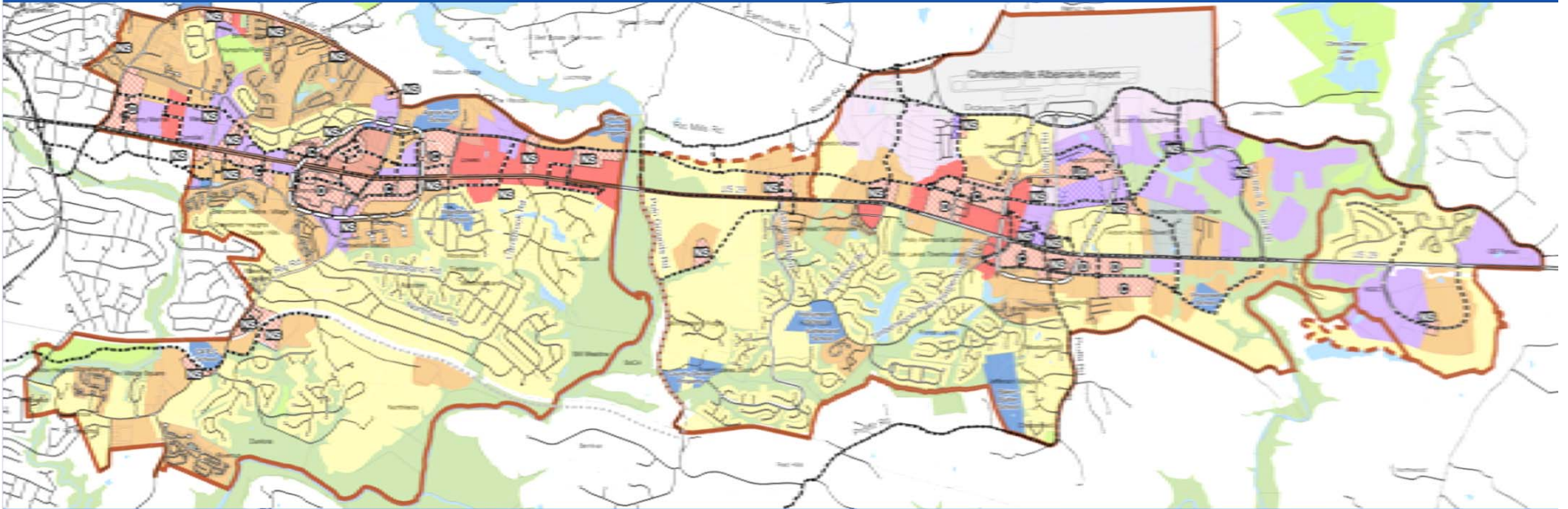


Research to Look Forward To...

- Affordable Housing in Transportation Corridors—
Built Environment, Accessibility, and Air Pollution
Implications of Near-Roadway Residential Locations
 - Study will look at HOPE VI and Low Income Housing Tax Credit projects in Southern California
 - Relationship to freeways and major roadways
 - Tracking of travel behavior and air pollution exposure of residents

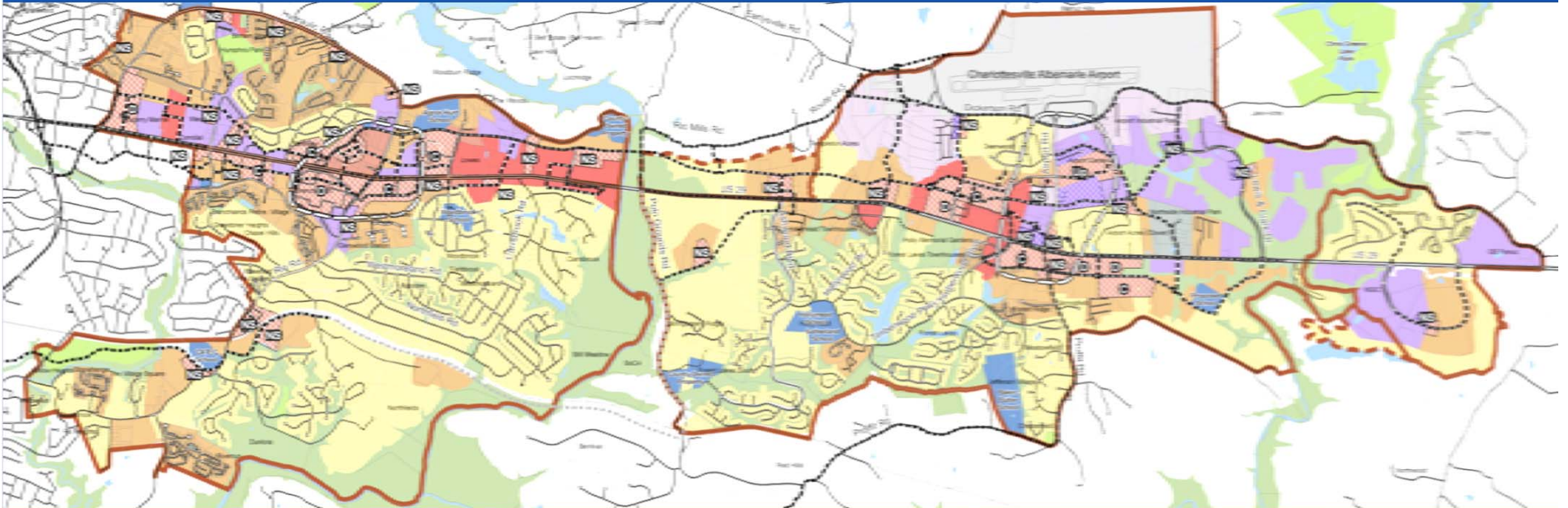
Policy Issue

- Need for comprehensive evaluation:
 - Measuring range of impacts and benefits
 - Weighing impacts and benefits



Design and Location Issues

- Current standards may favor development in green field areas rather than urban infill
 - Easier to provide buffers around roadways



Design and Location Issues



- For Transit Oriented Development —
 - Design systems to provide transit access away from major roadways
 - Locate employment and retail closest to major roadways with residential beyond (not feasible on many infill sites)

Caution! Big Job Ahead

Reduce Near-Road Health Hazards

- Reduce harmful emissions at tailpipe
- Lower roadway volumes
- Re-route trucks
- Choose transit alignments carefully
- Create high roadway connectivity for dispersed traffic