Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey

Project Update
February 2022
New Jersey Climate Change Alliance

**Existing Work Groups**

- Long-term Statewide Planning for Climate Change Workgroup
- Natural and Working Lands Workgroup
- Offshore Wind Ecological Monitoring Workgroup
- Public Health Workgroup
- Sustainable Organic Materials Management Workgroup

**NEW**

Transportation Workgroup
Changing policy dynamics at the State and national levels

Overburdened Communities (OBC)
Under the Environmental Justice Law
Data from 5-Year American Community Survey (2015 to 2019)

<table>
<thead>
<tr>
<th>Category of OBC*</th>
<th>Number of Block Groups</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>1,670</td>
<td>2,405,859</td>
</tr>
<tr>
<td>Low Income &amp; Minority</td>
<td>1,165</td>
<td>1,637,572</td>
</tr>
<tr>
<td>Low Income</td>
<td>197</td>
<td>274,412</td>
</tr>
<tr>
<td>Low Income, Minority &amp; Limited English</td>
<td>122</td>
<td>185,838</td>
</tr>
<tr>
<td>Minority &amp; Limited English</td>
<td>12</td>
<td>12,972</td>
</tr>
<tr>
<td>Low Income &amp; Limited English</td>
<td>2</td>
<td>2,574</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,168</td>
<td>4,918,217</td>
</tr>
</tbody>
</table>

*The Environmental Justice law defines OBCs as block groups with:
1. At least 40 percent low-income households;
2. At least 40 percent of the residents identify as minority or as members of a state-recognized tribal community; or
3. At least 40 percent of the households have limited English proficiency.

For more information, visit: nj.gov/dep/nj/communities.html
New Jersey Emissions Targets

2020 Emissions Reduction Goal
(Equivalent to 1990 GHG Emissions)

2050 Emissions Reduction Goal
(80% Decrease from 2006 Baseline)

New Jersey’s GHG Emissions and Goals (MMTCO₂e)
GHG Emissions in New Jersey

Reductions in the transportation sector will be critical to achieving NJ’s emissions target.
Significant attention being paid to vehicle electrification

- Charging infrastructure investments
- Rebates and tax credits to encourage EV purchases
- EVs can use HOV lanes
This infographic compares emissions and space consumption for different transport modes. Source: Institute for Sensible Transport
What can the working group do?

**Healthy.** Improve health outcomes for people and communities by improving air quality and making it easier and safer to walk and bike.

**Just.** Promote equity by making travel by transit more reliable and convenient and by enhancing access to opportunity for marginalized groups.

**Efficient.** Increase transportation system efficiency and effectiveness by integrating advanced and emerging transportation technologies and modes.

**Resilient.** Enhance the resilience of transportation systems by adapting infrastructure to climate hazards.

**Carbon Neutral.** Reduce energy use and emissions of all kinds by facilitating a transition to CO2-neutral transportation.
Toward a healthier, more equitable, and cleaner transport future in New Jersey

HEALTHY, JUST, RESILIENT, AND CO2-NEUTRAL MOBILITY FOR ALL
What is healthy mobility?

- Access
- Safety
- Physical activity
- Mental health
- Air quality
- Noise
What is equitable and just mobility?

An equitable and just transportation system provides safe and clean transportation options that are affordable, convenient, and easy to use.

Equitable mobility provides the same opportunity for everyone to move around reliably and sustainably in ways that meet their needs.
What is resilient mobility?

- Robustness
- Redundancy
- Flexibility
- Responsiveness
- Coordination
What is carbon-neutral mobility?
Guiding concepts

• Decarbonize the transportation sector
• Empower people to drive less
• Create a network of diverse and inclusive neighborhoods that are well connected to each other
• Think of mobility as a service and reimagine public transportation
• Embrace new technologies but ensure they are affordable and accessible to all
• Make social justice a key indicator of transportation performance
Potential Organizing Framework

“15-minute” City/Neighborhood

Leading Practice Examples

- Singapore
- Paris
- Portland
- Melbourne
- Ottawa
- Barcelona

Source: https://www.ft.com/content/c1a53744-90d5-4560-9e3f-17ce06aba69a
What is a "15-minute" city/neighborhood?
Key relationships

People + Places + Connections

Neighborhood  Community  Region
# Work Plan

<table>
<thead>
<tr>
<th>PHASE 1 – Exploring key concepts, desktop analysis, looking toward the future (Mar 2021 to Feb 2022)</th>
<th>Activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Conduct leading practice research</td>
</tr>
<tr>
<td></td>
<td>• Collect, analyze, and map data</td>
</tr>
<tr>
<td></td>
<td>• Identify of potential community and equity partners</td>
</tr>
<tr>
<td></td>
<td>• Convene “Thought Leaders” webinar and visioning workshops</td>
</tr>
<tr>
<td></td>
<td>• Identify vision components</td>
</tr>
<tr>
<td></td>
<td>• Select locations for neighborhood-scale analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHASE 2 – Field work, community engagement, and developing recommendations (Mar 2022 to Sep 2022)</th>
<th>Activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Conduct field visits and interviews to get to know the neighborhoods</td>
</tr>
<tr>
<td></td>
<td>• Develop and implement community engagement plan</td>
</tr>
<tr>
<td></td>
<td>• Identify local mobility and other community needs and concerns</td>
</tr>
<tr>
<td></td>
<td>• Prepare concept plans for retrofitting existing neighborhoods</td>
</tr>
<tr>
<td></td>
<td>• Identify infrastructure needs</td>
</tr>
<tr>
<td></td>
<td>• Develop planning and policy recommendations</td>
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<tr>
<td></td>
<td>• Prepare comprehensive final report</td>
</tr>
<tr>
<td></td>
<td>• Convene “Thought Leaders” Forum #2 – How do we get there?</td>
</tr>
</tbody>
</table>
Phase 1 Case Study Locations

1. Atlantic
2. Camden
3. Cumberland
4. Essex
5. Hudson
6. Mercer
7. Middlesex
8. Warren
Exploring the Geography of People, Place, and Connections

MIDDLESEX COUNTY
Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF PEOPLE
A mix of small towns, urban centers and rural communities

- 309 square miles
- 25 Municipalities
- Over 830,000 residents
- County Seat: New Brunswick
Change in Population : 2014-2019


Percent population change, 2014-2019

-57.04% - -19.08%
-19.07% - 0.00%
+0.01% - +26.36%
+26.37% - +75.87%
+75.88% - +247.76%

Data Source: NJGIN, ACS 2014 and 2019 estimate
Race and Ethnicity - 2018

Data source: US Census Bureau ACS 1-year Estimate. Graphic credit: Data USA
Age & Gender

Median Age: 38.7 years old
# Household Income

**AHPNJ Region 3: 2020 Affordable Housing Income Limits. Region 3: Hunterdon, Middlesex and Somerset**

<table>
<thead>
<tr>
<th></th>
<th>Income Limit (4 person Household)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low</td>
<td>$35,850</td>
</tr>
<tr>
<td>Low</td>
<td>$52,755</td>
</tr>
<tr>
<td>Moderate</td>
<td>$95,600</td>
</tr>
<tr>
<td>Median</td>
<td>$119,500</td>
</tr>
</tbody>
</table>

**County Average Median Household Income: $95,000**

- **Low income block group**
- **Median household income by block group**
  - 11,396 - 52,368
  - 52,369 - 80,625
  - 80,626 - 110,625
  - 110,626 - 148,315
  - 148,316 - 239,219
  - No data

Data Source: NJGIN, ACS 2015-2019 5-year estimate

Note: Low income block groups as median household income < $59,750 (AHPNJ)
Households living in poverty

Low income block group
1 Dot = 10
- households under poverty

Percent of Households under Poverty by Block Group
- 0% - 4.29%
- 4.3% - 8.61%
- 8.62% - 22.94%  County average: 22.94%
- 22.95% - 41.85%
- 41.86% - 74.07%
- no data

Data Source: NJGIN, ACS 2015-2019
5-year estimate
Educational Attainment

25 years and older w/ less than Bachelor's Degree

Educational Attainment (less than high school)

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than H.S Diploma</td>
<td>10.18%</td>
</tr>
<tr>
<td>H.S Diploma or equivalent</td>
<td>25.29%</td>
</tr>
<tr>
<td>Some College</td>
<td>20.96%</td>
</tr>
<tr>
<td>Professional School Degree</td>
<td>2.21%</td>
</tr>
<tr>
<td>Bachelor's Degree or higher</td>
<td>41.35%</td>
</tr>
</tbody>
</table>

25 years and older w/ Bachelor's Degree or higher

Educational Attainment (Bachelor's degree or higher)

Data Source: NGIN, ACS 2015-2019 5-year estimate

Low income block group
Percent of population with less than a high school degree
- 0% - 5.7%
- 5.71% - 12.47%
- 12.48% - 23.93%
- 23.94% - 46.13%
- 46.14% - 71.18%

Low income block group
Percent of population with a bachelor's degree or higher
- 0% - 20.16%
- 20.17% - 34.85%
- 34.86% - 50.91%
- 50.92% - 66.24%
- 66.25% - 95.43%

Data Source: NGIN, ACS 2015-2019 5-year estimate
Employment Status

Low income block group

Percent of unemployed population by block group:
- 0% - 3.13%
- 3.13% - 6.72%
- 6.73% - 12.09%
- 12.1% - 27.92%
- 27.93% - 47.65%

Data Source: NGIN, ACS 2015-2019 5-year estimate
Indicators of Potential Disadvantage

• Racial Minority
• Foreign Born status
• Limited English Proficiency
• Disability status
• Older Adults (75+)
• Single Parent households
Indicators of Potential Disadvantage

Racial Minority
- 1 Dot = 200 persons
- Low income block group

Percent of Racial Minority Population by Block Group:
- 9% - 16.92%
- 17.92% - 26.94%
- 27.95% - 46.31%
- 47.32% - 80.57%
- 81.58% - 100%

Data Source: NGSIN, ACS 2015-2019 5-year estimate

Foreign-born Population
- 1 Dot = 200 foreign born persons
- Low income block group

Percent of Foreign-born Population by Census Tract:
- 9.97% - 19.01%
- 19.02% - 33.84%
- 33.85% - 48.15%
- 48.16% - 64.28%
- 64.29% - 91.53%
- County average: 32.34%

Data Source: NGSIN, ACS 2015-2019 5-year estimate

Limited English Proficiency
- 1 Dot = 20 households
- Low income block group

Percent of Limited English Proficiency Households by Block Group:
- 0% - 4.31%
- 4.32% - 8.34%
- 8.35% - 12.37%
- 12.38% - County average: 8.37%
- 8.38% - 12.39%
- 12.40% - 16.32%
- 16.33% - 20.35%
- 20.36% - 40.38%
- 40.39% - 60.41%
- 60.42% - 80.44%
- 80.45% - 100%

Data Source: NGSIN, ACS 2015-2019 5-year estimate
Indicators of Potential Disadvantage

Persons with Disability

Older Adults (75+)

Single Parent Family

Data Source: NJGIN, ACS 2015-2019 5-year estimate
## Health Behaviors

Middlesex is ranked among the healthiest counties in New Jersey (Highest 75%-100%)

<table>
<thead>
<tr>
<th>Health Behaviors</th>
<th>Middlesex County</th>
<th>NJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Smoking</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Adult obesity</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Food environment index</td>
<td>8.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Access to exercise opportunities</td>
<td>97%</td>
<td>95%</td>
</tr>
<tr>
<td>Excessive drinking</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>Alcohol-impaired driving deaths</td>
<td>24%</td>
<td>22%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Environment</th>
<th>Middlesex County</th>
<th>NJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pollution-particulate matter</td>
<td>9.7</td>
<td>9.9</td>
</tr>
<tr>
<td>Drinking water problems</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Severe housing problems</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>Driving alone to work</td>
<td>73%</td>
<td>71%</td>
</tr>
<tr>
<td>Long commute-driving alone</td>
<td>46%</td>
<td>43%</td>
</tr>
</tbody>
</table>

Source: 2020 NJ County Health rankings
Middlesex is ranked in the higher middle range of counties in New Jersey (Higher 50%-75%) regarding Health outcomes.

<table>
<thead>
<tr>
<th>Quality of Life</th>
<th>Middlesex County</th>
<th>NJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor or fair health</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Poor physical health days</td>
<td>3.2</td>
<td>3.7</td>
</tr>
<tr>
<td>Poor mental health days</td>
<td>3.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Low birthweight</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Life Expectancy</td>
<td>81.5 years</td>
<td>80.4 years</td>
</tr>
<tr>
<td>Diabetes prevalence</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Frequent physical distress</td>
<td>9%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Leading Causes of Death Under age 75 in Middlesex County:

- Malignant neoplasms: 2053 deaths
- Diseases of heart: 1391 deaths
- Accidents: 791 deaths
- Diabetes mellitus: 230 deaths
- Cerebrovascular diseases: 226 deaths

Source: 2020 NJ County Health rankings
Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF PLACE
Natural Land Use

Land Use
- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS

Data source: NCHGIS
Urban Land Use

- Residential
- Commercial and Service
- Industrial
- Transportation/Communication/Utilities
- Recreational Land
- Other Urban Land

Other Land Uses
- Agriculture
- Barren Land
- Forest
- Water
- Wetlands

Data Source: NUGIN
Employment Density

Number of employees per sq mile:
- 0 - 801
- 802 - 2,093
- 2,094 - 3,989
- 3,990 - 8,091
- 8,092 - 18,286

Data Source: NGIN, ESRI Business Analyst (2020 data)
Note: The area of a hexagon is 1 sq mile
Employment Density by Wage

Number of employees per sq. mile by wage category by place of residence and place of work

Data source: NJGIN, Longitudinal Employer-Household Dynamics (LEHD) 2014-2018 5-year estimate

Note: low-wage: earnings $1250/month or less; mid-wage: earnings $1251/month to $3333/month; higher-wage: earnings greater than $3333/month
Education Services

Type 1: Colleges and universities

Type 2: K-12 public schools
Recreation

Type 1: State, local and nonprofit Open Space

Type 2: Fitness centers
Medical Services

Type 1: Hospitals and emergency centers

Type 2: Pharmacies

- Low income block group
- Hospital and emergency center
- Pharmacy and drug store
Other Essential Services

Type 1: Commercial Banks and Credit Unions

Type 2: Postal Services

Type 3: Childcare Centers

- Low income block group
  - Postal service
  - Commercial banking
  - Credit unions
  - Childcare center
Commercial Amenities

Type 1: Full-service grocery stores
Type 2: Convenience/Specialty stores
Type 3: Laundromats
Climate Vulnerability

Sea-level rise

- Low income block group
- 5 ft sea level rise depth
  - High
  - Low

Data Source: NJGIN, ACS 2015-2019
5-year estimate, NOAA
Climate Vulnerability

Exposure to extreme heat (High-emissions scenario)

Source: NJ Forest Adapt
Healthy, Just and CO2-neutral Mobility for All

GEOGRAPHY OF MOBILITY AND CONNECTIONS
Type
- Interstate/US/State highway
- County Route
- Local Road
- Low income block group

Data Source: NJGIN, ESRI base map

Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey
Prepared: June 10, 2021
by Alan M. Voorhees Transportation Center
Intersection Density

Number of intersections per acre
- 3 - 39
- 40 - 79
- 80 - 127
- 128 - 198
- 199 - 436

Low income block group

Data Source: NJGIN, ESRI base map, EPA National Walkability Index

Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey
Prepared: June 10, 2021 by Alan M. Voorhees Transportation Center
**Bus Service Frequency**

- **Max wait time**
  - 0 - 12 min
  - 13 - 41 min
  - 42 - 55 min
  - 56 - 68 min
  - 69 - 119 min

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**Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey**

Prepared: June 10, 2021
by Alan M. Voorhees Transportation Center
Alt. Fueling Station

Fuel Type
- Biodiesel
- Ethanol
- Electric
- Liquefied Petroleum Gas

Data Source: NJGIN, ESRI base map, US Department of Energy

Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey
Prepared: June 10, 2021
by Alan M. Voorhees Transportation Center
Measured Accessibility Analysis

Connectivity (street intersections)

Frequent Service Transit

Public Schools

Recreation Facilities

Medical Services

Commercial Amenities

Essential Services

Input score/distance from medical services
0 = > 1 mile
1 = 1/2 - 1 mile
2 = 1/4 - 1/2 mile
3 = < 1/4 mile
Medical services

Input score/distance from commercial amenities
0 = > 1 mile
1 = 1/2 - 1 mile
2 = 1/4 - 1/2 mile
3 = < 1/4 mile
Commercial amenities

Input score/distance from essential services
0 = > 1 mile
1 = 1/2 - 1 mile
2 = 1/4 - 1/2 mile
3 = < 1/4 mile
Essential services
“15-min.” Accessibility

Accessibility
- Best access
- Moderate access
- Limited access
- Low income block group

Data Source: NJGIN, ESRI base map, ESRI Business Analyst, NJ Transit GTFS data

Planning for Healthy, Just, Resilient, and CO2-Neutral Mobility in New Jersey
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by Alan M. Voorhees Transportation Center

Rutgers
Edward J. Bloustein School of Planning and Public Policy
Next Steps – By Mid-August

• Finalize concept paper
  – Annotated bibliography complete

• Complete Phase 1 case-study reports
  – Summary narrative
  – Map atlas
  – Preliminary observations, issues, concerns

• Plan Issues Forum #1
  – Convene an event planning committee with
    representatives from case-study counties and
    equity partners
Issues Forum #1

• Objectives
  – Explore the components of the multi-goal framework
  – Identify
    • Needs, concerns, and desired long-term outcomes
    • Performance measures
    • What needs to change
    • Potential obstacles and impediments to achieving healthy, just, resilient, and carbon-neutral mobility for all

• Format
  – Plenary + breakouts
  – Virtual or in-person depending on conditions

• Timing – Sept-Oct 2021
Thoughts? Questions? Discussion?