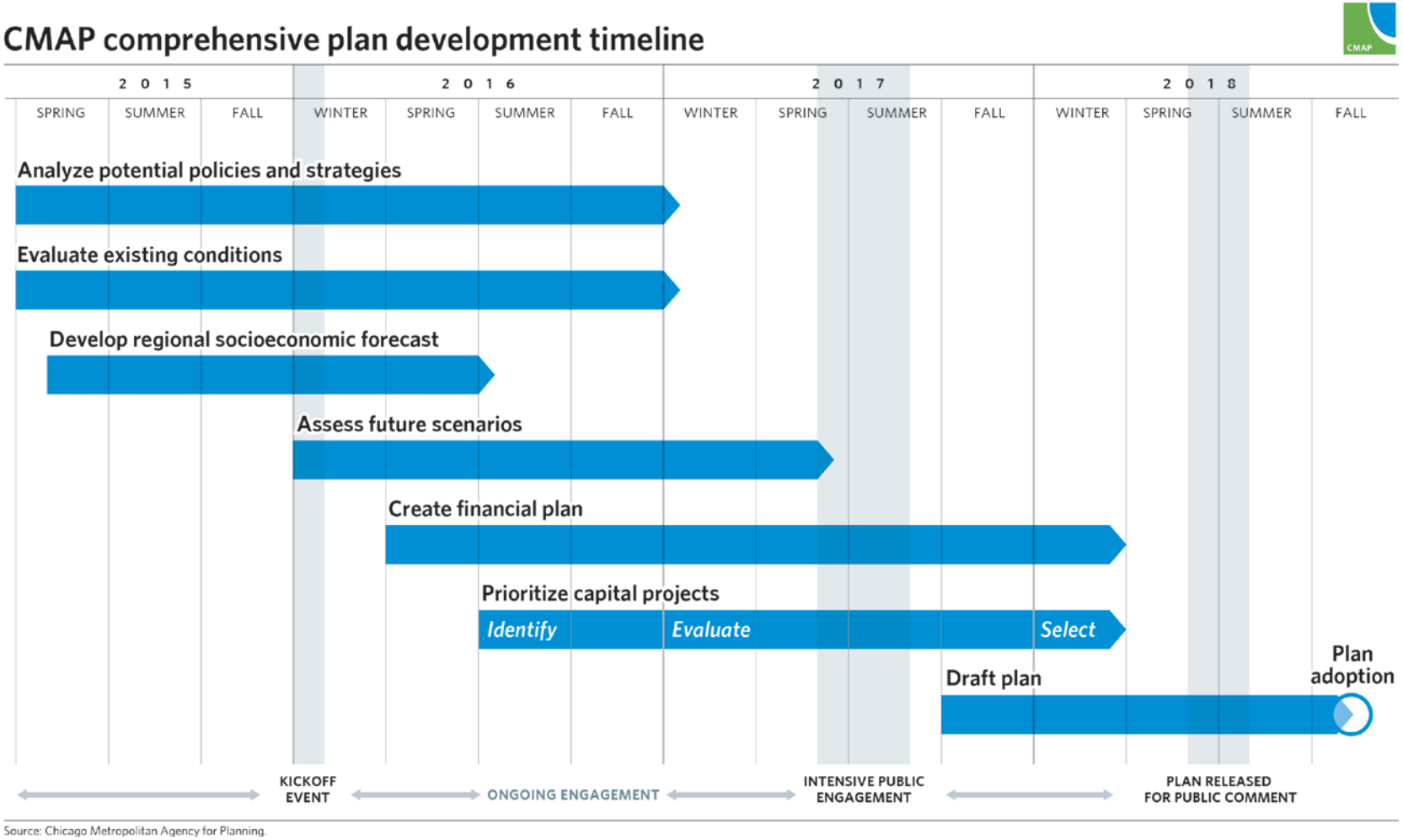
Climate Resilience Policy Framework

Land Use Committee

February 17, 2016

Regional Planning Process



Source: Chicago Metropolitan Agency for Planning.

Strategy Paper Objectives

- Explore the topic of climate resilience, which was not fully addressed in GO TO 2040
- Identify alignments between climate resilience and other CMAP priority areas
- Develop a shared regional vision of climate resilience
- Develop a policy framework for CMAP to address climate resilience
- Identify future research that CMAP can pursue as it develops a climate resilience strategy
- Identify general roles for regional partners actors

Strategy Paper Process

- Monthly meetings of activities and discussions with a **Resource Group**, co-chaired by the Chicago Community Trust, representing sectors ranging from public health, emergency management, transportation, land management, urban design, and energy

- Analysis of **regional vulnerability** to climate impacts

- Shared **definition** and draft **vision** for regional climate resilience informed by Resource Group

- **Business leaders forum** identifying private sector priorities

Proposed Outline

1. Introduction: Moving toward a resilience framework

a. Purpose of the strategy paper
b. Definition of regional climate resilience
c. Why is climate change important to the region?

2. Regional climate vulnerability assessment

a. Climate changes in northeastern Illinois
b. Regional vulnerabilities to climate change (including definition of climate vulnerability)

3. The existing climate resilience landscape

a. Prior agency work on climate change
b. Climate action in local communities in CMAP region
c. State, federal, and international climate policies and implications for the region

4. Climate resilience policy framework

a. Guiding principles of the vision for regional climate resilience
b. CMAP strategy areas
c. Stakeholder strategy areas

5. Next steps

a. Measurement of success
b. Future areas of research

Vision for a Resilient Region: A Proposed Policy Framework

1. Responsive and robust infrastructure

2. Participatory and integrated processes

3. Equitable reduction of vulnerability

1. Responsive and Robust Infrastructure

- Stronger infrastructure (buildings, transportation networks, energy systems, sewer pipes, and green infrastructure) that accounts for current and future climate conditions
- Smarter infrastructure that is more flexible and responsive
- Green and gray infrastructure will be designed as flexible, interconnected networks that build redundancies
- Natural landscapes that support healthy, biodiverse ecosystems, and provide a first line of defense against climate impacts

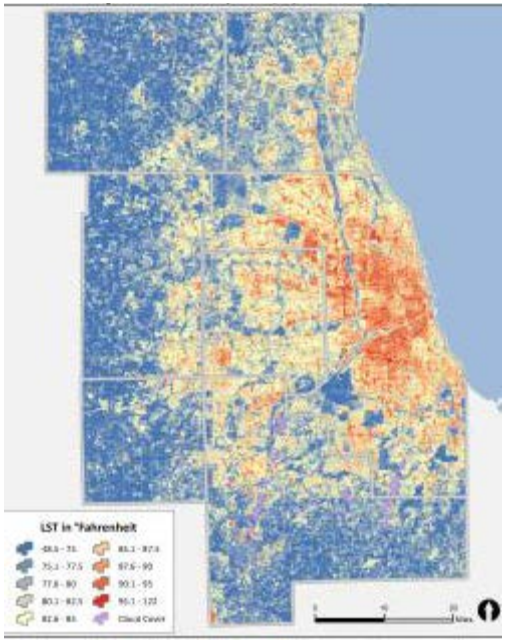
2. Participatory and Integrated Processes

- Engagement processes will enable resilience planning
- Reliance on multiple forms of information, from technical to experiential, to guide decision-making
- Communication of real-time data built into infrastructure design to enable data-driven decisions
- Multi-directional dialogue to foster shared ownership across sectors

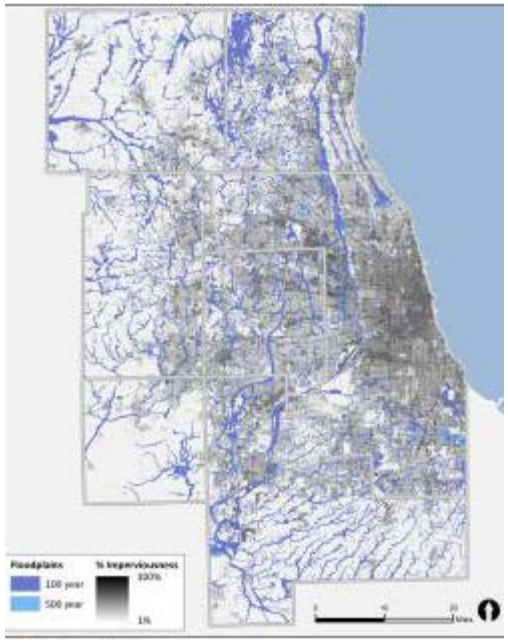
3. Equitable Reduction of Vulnerability

- Provision of critical services and infrastructure in all climate conditions
- Strategies that reduce impacts of climate change, particularly in vulnerable communities (whether due to geographic of socioeconomic factors)
- Capacity building and physical planning practices that strengthen community networks

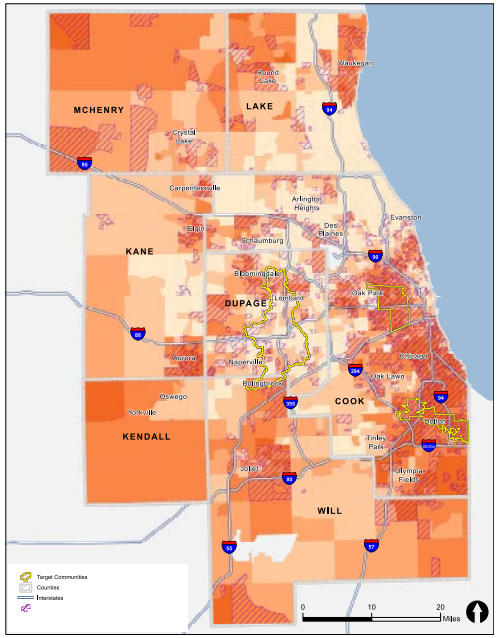
Analysis process



Exposure



Exacerbating factors

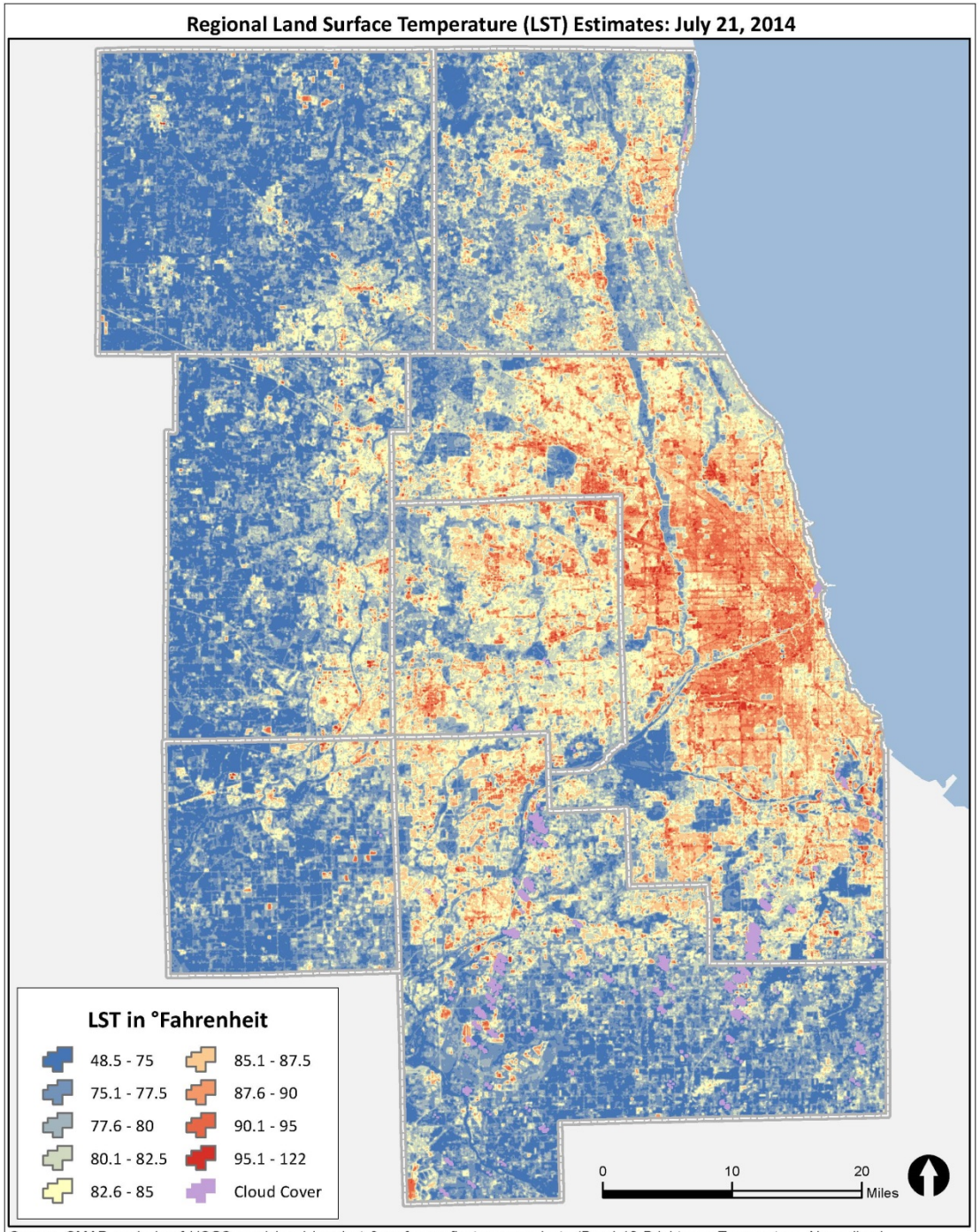


ept. Housing and Urban Development

Socioeconomic sensitivity

Heat Impacts

Land surface temperature of the region



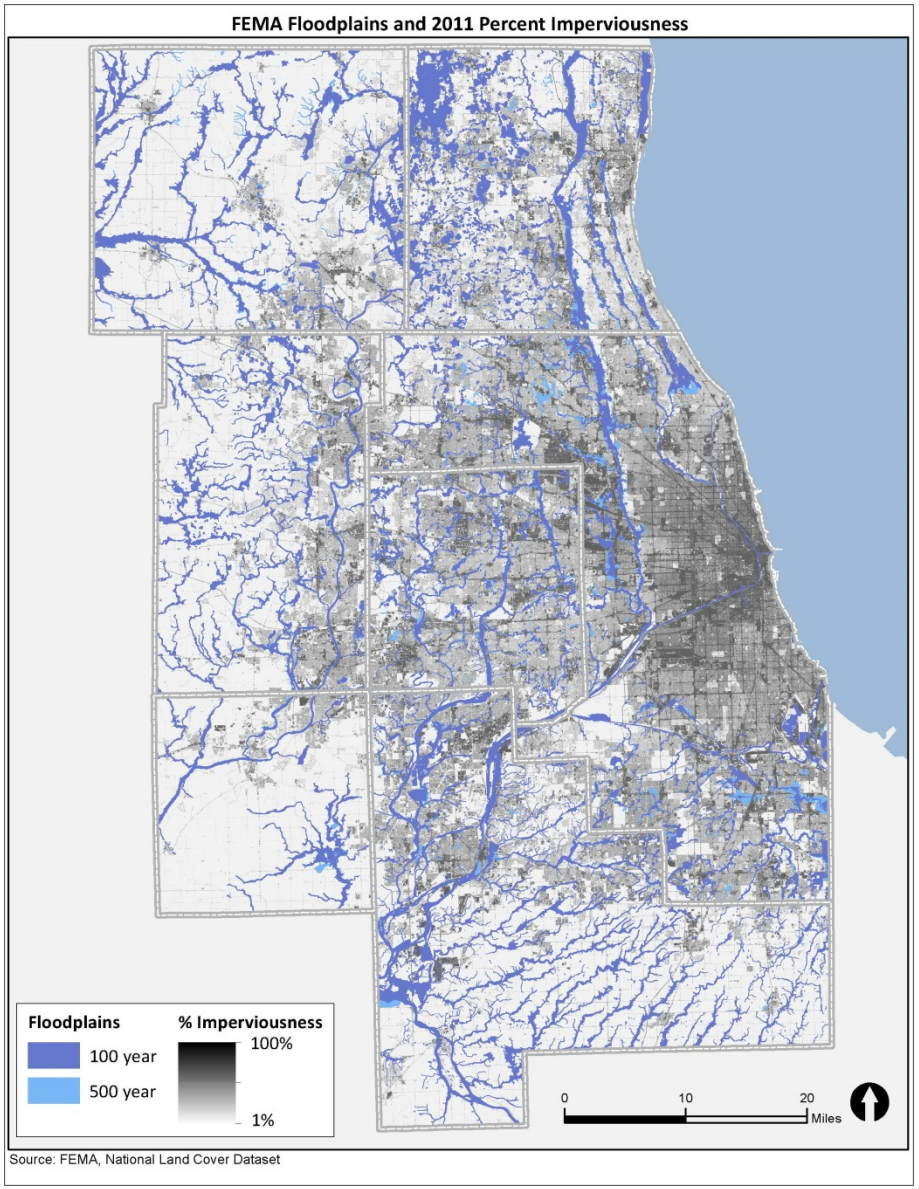
Source: CMAP analysis of USGS provisional Landsat 8 surface reflectance products (Band 10 Brightness Temperature, Normalized Difference Vegetation Index, and CFMask)

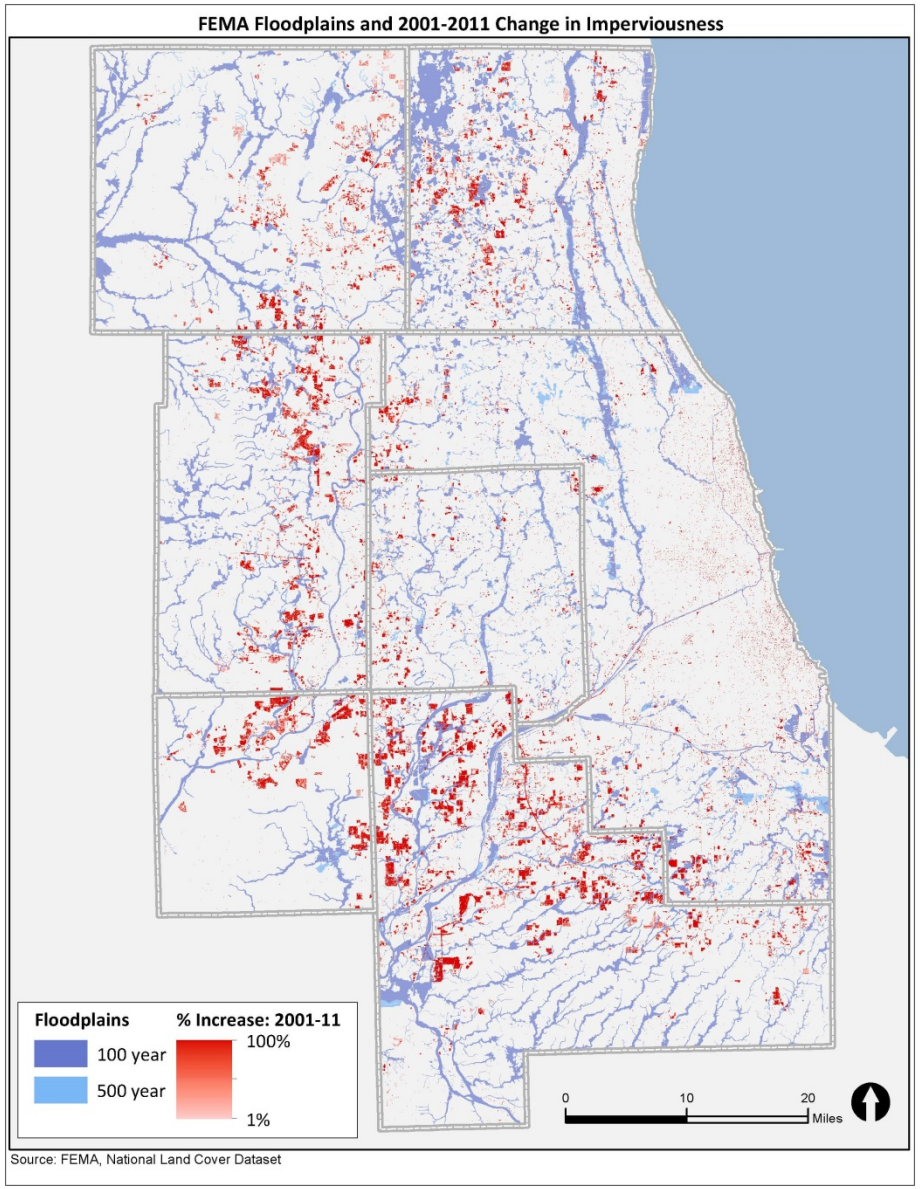
Average Land Surface Temperature by Land Cover Type

NLCD 2011 Land Cover Class	Acreage	Percent	Average LST (°F)	Difference from regional LST (°F)
Developed, High Intensity	139,196.7	5.39%	86.48	6.56
Developed, Medium Intensity	302,821.9	11.72%	85.03	5.11
Developed, Low Intensity	611,845.9	23.68%	82.39	2.47
Planted/Cultivated	881,436.9	34.11%	81.66	1.74
Barren	11,342.4	0.44%	81.53	1.61
Herbaceous	60,863.0	2.36%	80.36	0.44
Shrubland	7,388.8	0.29%	78.64	-1.28
Wetlands	76,196.7	2.95%	78.61	-1.31
Forest	187,242.0	7.25%	78.27	-1.65
Water	55,330.0	2.14%	77.98	-1.94
Total Acreage / Avg LST	2,583,865.7	100.00%	79.92	0.00

[i] Based on temperatures from July 21, 2014.
[ii] See land cover classification descriptions: http://www.mrlc.gov/nlcd11_leg.php.

Flood Impacts: Impervious Cover





Land Uses in the Floodplain

2010 Land Use	Acres within 100- and 500-year FEMA Floodplains	% of Floodplain
Agricultural	88,808.6	**28.47%**
Commercial	5,255.7	1.69%
Industrial	6,570.1	2.11%
Institutional	6,830.9	2.19%
Multi-Family Residential	2,156.3	0.69%
Single-Family Residential	42,168.2	**13.52%**
Mixed Use	82.2	0.03%
Open Space	88,624.9	**28.42%**
Transportation and Other	51,367.0	**16.47%**
Vacant	20,030.2	6.42%
Total	311,893.9	100.00%

* Will do more complete flood impact analysis to account for urban flooding

Socioeconomic Vulnerabilities to Heat and Flooding

Socioeconomic Characteristic	Regional Population		In Tracts with Average Land Surface Temp >90°F		In Tracts with >50% area inside FEMA floodplain	
	Count	Percent	Count	Percent	Count	Percent
Total Population	8,459,768	100%	511,171	100%	87,964	100%
Elderly population (over 65 years)	985,965	11.7%	45,368	8.9%	10,678	12.1%
People of Color	3,984,256	47.1%	381,249	**74.6%**	51,652	**58.7%**
Limited English Proficiency	1,039,481	13.2%	144,993	**30.7%**	12,295	15.0%
Family Income below Poverty Level	1,132,259	13.6%	101,134	20.0%	11,787	13.5%
No Health Insurance Coverage	1,200,855	14.3%	125,787	**24.7%**	15,670	17.9%

[i] 2009-2013 American Community Survey.
[ii] Includes Latino/Hispanic.
[iii] Includes populations over 5 years old that speak English "less than very well."
[iv] Determined for all people except institutionalized people, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old.
Poverty thresholds vary depending on family size and composition, but not by geography. The people included in this measure are below the appropriate threshold for their family context.

Next Steps

- Gather Committee input on policy framework
- Work with Resource Group to develop strategies that achieve the vision
- Return to Committees in May to solicit input on strategy directions

For more information

Louise Yeung

Climate Resilience Strategy Paper Project Manager

lyeung@cmap.illinois.gov

Kristin Ihnchak & Liz Schuh

Comprehensive Plan Development Co-Project Managers

kihnchak@cmap.illinois.gov & eschuh@cmap.illinois.gov