ADAPTATION IMPLEMENTATION: CHICAGO CLIMATE ACTION
Evolution of Urban Adaptation

• Ecosystem
• Infrastructure
• People/Equity
CHICAGO CLIMATE ACTION PLAN
FIVE STRATEGIES

Co-Benefits:
Improved Quality of Life

ADDRESSING THE CHALLENGE OF CLIMATE CHANGE

ENERGY EFFICIENT BUILDINGS
8 ACTIONS

CLEAN & RENEWABLE ENERGY SOURCES
5 ACTIONS

IMPROVED TRANSPORTATION OPTIONS
10 ACTIONS

REDUCED WASTE & INDUSTRIAL POLLUTION
3 ACTIONS

PREPARATION
9 ACTIONS

= 35 WAYS TO ENSURE A RESILIENT CITY
Projected number of 100-degree days per year in Chicago:

Higher Emissions: 31 days

Lower Emissions: 8 days
**Fact:** In a high-emissions scenario, Chicago could experience 1,200 heat-related deaths per year by 2085

**Chicago Metropolitan Area Heat-Related Deaths**
Observations and projections under multiple emissions scenarios

*Deaths per 6 million people (Current population of the Chicago Metropolitan Area)*

Climate Matters: Emergency Services

More heat emergencies... More storms... More fires

Increased demand on first responders
Climate Matters: Extreme Precipitation

More rain when it is not needed, less when it is needed

Combined sewer overflows and swim bans
Economic Risk of Climate Impacts

Analyzed economic impacts on City infrastructure, key departments and budgets in partnership with Oliver Wyman,

1. Areas & type of financial impact (e.g. capital investment, operational costs)
2. Primary impact drivers, (e.g. heat, precipitation)
3. Nature of the impact, (e.g. deterioration of building facades)
4. Magnitude of potential impacts

Chart source: Oliver Wyman, Corporate Risk Case Study, 2008.
Risk Impact and Probability Distributions

Impact and probability distributions were established for scenarios affecting City operations and assets.

Chart source: Oliver Wyman, Corporate Risk Case Study, 2008.
Adaptation Implementation Prioritization

Prioritized adaptation actions by risk, timing, and department in collaboration with MWH

- Identify adaptation strategies and develop implementation tactics to reduce vulnerability to:
  - Extreme heat
  - Extreme precipitation
  - Buildings/infrastructure/equipment
  - Ecosystem degradation

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<td>Need to get greater penetration of A/C to residential units (particularly high risk areas)</td>
<td>Moderate</td>
<td>Near</td>
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<td>Damage to property and increasing cost of insurance due to stormwater</td>
<td>Moderate</td>
<td>Mid</td>
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<td>Higher costs associated with managing invasive species</td>
<td>Moderate</td>
<td>Mid</td>
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<td>Increased potential for shoreline erosion/storm damage</td>
<td>Moderate</td>
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<tr>
<td>Possibility of higher frequency/severity of storms</td>
<td>Moderate</td>
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# CCAP Adaptation Evolution

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<td><em>Understood the climate science:</em> Assess climate impacts</td>
<td><em>Created 5 climate impacts working groups:</em> 21 departments &amp; agencies create 39 “Tactics” for 5 groups</td>
<td><em>Created CCAP department work plans:</em> Departments commit to adaptation actions through work plans</td>
<td><em>Defined adaptation targets:</em> People, Natural Environment, Built Environment</td>
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<td><em>Assessed economic risk:</em> Project City cost of no action at -$2.54B in high-emissions</td>
<td><em>Launched CCAP:</em> Mayor, September</td>
<td><em>Hosting “Lessons Learned” meetings:</em> Improve responses to extreme weather events</td>
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<td><em>Developed adaptation action framework:</em> Prioritize actions by risk &amp; timing</td>
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<td><em>Forming Adaptation Advisory Group:</em> Will provide guidance and oversight</td>
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Adaptation Resources

CLIMATE CHANGE AND CHICAGO

Projections and potential impacts

Corporate risk analysis

Adaptation quick guide

www.chicagoclimatetaction.org
Adaptation Quantification

Potential measures

• Climate change measures

• Climate readiness measures
  • Stormwater catch-basin restrictors in place (built environment)
  • Permeable pavement built (built environment)
  • Water control structures sized for extreme precipitation (natural environment)
  • Urban Heat Island area planted with climate ready trees (natural environment)

• Surveillance measures
  • Heat-related fatalities per year (people)
  • Street closure hours per year due to flooding (people, built environment)
  • Power shut down hours per year (people, built environment)
  • Heat-related school and labor absences per year, (people)
  • Beach closure days per year, (natural environment)
CCAP’s Adaptation Drivers

• Model City adaptation implementation for CCAP scale-out
• Leverage City business as usual to serve adaptation goals
• Prioritize vulnerable communities
• Balance the need for research with the need to act
• Enhance collateral benefits of climate change mitigation
Mitigation-Adaptation Overlap

Example Complementary Actions

- Stormwater management
- Urban forest management
- Green infrastructure to help capture stormwater on-site
- High albedo surfaces
How Health, Climate Change, and Social Justice Intersect in Chicago

by 3p Contributor on Wednesday, Dec 14th, 2016, SOCIETY

I'm immersed in a fascinating variety of projects for the Rockefeller Foundation and Regional Plan Association and include a similar question about how to finance urban resilience. That got me wondering: What well-known financing solutions could help us to finance more adaptation today?

Here are seven:

1. **Climate Reinvestment Act**: In the post-housing bust period, Community Reinvestment Act funds have shifted to financing schools and the like from funding low-income housing. This has been a shift for banks that used to achieve their CRA goals within their general market share in low-value mortgages. So, what if banks instead the credit needs of the communities where they operate used CRA investments for resilience that improved communities, such as green infrastructure to absorb stormwater and prevent flooding? Or how about LaBelle Bank, which a decade ago paid for tree planting along the Chicago marathon route counter urban heat island and runner’s heat stress.

2. **General Obligation Bonds**: Cities are reluctant to assume more debt, worried especially about damaging their credit ratings. Yet, deferred maintenance, presumably triggered partly by insufficient bonds to pay for infrastructure improvements, means that much of the country’s infrastructure earns a dismal grade of D+ from the Society of Civil Engineers. Credit ratings, though, are relative scales and more of them are mindful of resilience—see the Standard & Poor’s recent reports on the impact of climate risk on sovereigns and corporations—and it’s a great time to borrow with interest rates low and investors seeking to diversify from stocks in a but market.

3. **Green Banks**: In the last decade, a healthy proliferation of Green Banks—public or quasi-public financing institutions that provide low-cost, long-term financing support to