



Policy Options for Promoting Sustainable Building

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Executive Summary

The Triangle J Council of Governments (TJCOG) is a regional, public sector planning organization whose members include seven counties and thirty-nine municipalities in North Carolina's Triangle region. TJCOG received a request from local entities through its Innovation Sandbox program to help address construction and demolition waste challenges within the region, which is experiencing rapid population growth and corresponding development.

Given the breadth of the Sandbox request, our team worked with TJCOG to refine the scope and focus on encouraging the use of sustainable building materials. Specifically, our team was tasked with researching sustainable building materials and providing recommendations on ways TJCOG or its members can encourage the incorporation of sustainable building materials in new construction.

Our team's research methods included background research, case study research, and interviews with relevant experts. Our recommendations focus on education and incentivization rather than mandates and requirements. North Carolina is not a home rule state, and our research suggests "carrots" rather than "sticks" are less likely to be overridden by courts or legislators.



Policy Question

Creating policies and/or programs to encourage sustainably designed buildings and reduce associated hazards to the health of building inhabitants will benefit the region as it undergoes significant population growth and commensurate residential and commercial development.

After discussing with TJCOG this policy challenge, we agreed that the question our team would focus on is: Given North Carolina is a Dillon Rule state, how can TJCOG municipal and county member governments encourage the use of sustainable materials in commercial and multifamily building construction?

This report responds to this question by providing recommendations that consider incentives, regulations, and programs in other United States jurisdictions which may be appropriate for the TJCOG members.

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Given North Carolina is a Dillon Rule state, how can TJCOG municipal and county governments encourage the use of sustainable materials in commercial and multifamily construction?

Methodology

1 Case Studies

Our team conducted case studies to understand the strengths and limitations of four green building incentive programs implemented elsewhere. The cases used were Arlington County, Virginia; Scottsdale, Arizona; Catawba County, North Carolina; and Chicago, Illinois. Our focus narrowed on states also constrained by Dillon's rule to best ensure that lessons gleaned from other programs can be applied in the Triangle J region.

2 Interviews

Our team also conducted expert interviews. First, we interviewed officials from our case study locations. This was to glean deeper insight into the rollout, successes, failures and learnings of their green building incentive programs. We also interviewed a handful of topic-specific experts. Among those we spoke with experts in Dillon's rule and sustainable building materials.

Our interviews took place via Zoom. Interviews were recorded with permission of participants and transcribed for further study. Most interviews had two team members present, allowing one to lead conversation and the other to take detailed notes.

Interviews were semi-structured with a list of predetermined questions created by the team (See Appendix C). These questions were tailored to each individual interviewee to maximize their expertise through pointed questions.

Background

TJCOG'S Regulatory Authority

TJCOG members' legal authority to adopt specific requirements regarding construction is constrained to the powers granted to them by the state. After settling on our policy question and during the course of our research, our team learned that North Carolina is neither a Dillon's Rule nor a home rule state (see Appendix A for definitions).[1] Rather, local governments in the state are granted authority through various subject-specific statutes.

Chapters 153/153A and 160A of the North Carolina General Statutes enumerate municipal and local governments' powers.[2] Notably, the statutes grant regional governments broad police powers. Municipalities may "define, prohibit, regulate, or abate acts, omissions, or conditions detrimental to the health, safety, or welfare of its citizens and the peace and dignity of the [city or county]; and may define and abate nuisances." [3]

More specific state statutes also exist governing local and regional governments' authority. Notably, local governments have the authority to generate revenue through property taxes, sales taxes, privilege license taxes, and utility fees. Counties have the authority to regulate county land use and make provisions for the future of county development.[4]

When it comes to construction, North Carolina counties utilize their zoning authority to establish ordinances regulating building codes. The building code can restrict the building's number of stories, height, bulk, and lot size occupied, as well as mandate other measures to ensure public safety. Counties may also establish a building inspection agency to ensure compliance with building codes.[5]

The idea that non-home rule states may allow for construction regulation by local governments is supported by academic scholarship. A report published by Environmental Law argues that ordinances passed by local governments to promote sustainable and efficient building practices are within the purview of "public health, safety, and welfare." [6]

Growing awareness of and knowledge about building sickness and greenhouse gas emissions have helped building regulatory authorities realize that green building laws safeguard public welfare. However, it is uncertain whether a North Carolina court would uphold a local government’s authority to mandate sustainable materials based on this reasoning.

Still, incentive-based tools are available to municipalities in non-home rule states for promoting green building. Cities can encourage green building, for example, through expedited permitting review, zoning allowances, or financial incentives. Similarly, municipalities have the authority to upgrade municipal buildings and facilities to be more energy efficient, since municipalities maintain fairly extensive authority over municipal property.[7]

Our research suggests that North Carolina’s status as a non-home rule state means that any such policies, whether in the form of incentives or mandates, would likely not be immune from state intervention. The North Carolina state government generally has the power to override or outlaw local government policies as they see fit. The legislature and executive branch may enact policies to supersede localities, and local policies are also subject to judicial review if challenged in court. As such, our recommendations focus on incentivization rather than mandates to reduce the chance that courts or the state government would intervene or overturn them, an approach suggested by one of the experts we interviewed.[8]



Sustainable Building Materials

TJCOG seeks to encourage the use of sustainable materials in large-scale development by satisfying three criteria: resource efficiency, energy efficiency, and pollution prevention.[9] Resource efficiency refers to using Earth's scarce resources in an efficient manner. Typically, sustainable building materials are made from renewable resources, such as plant materials, rather than nonrenewable resources commonly derived from fossil fuels.[10] Additionally, to maximize resource efficiency, sustainable building materials should be reusable or recyclable; this reduces the need to extract resources and inherently reduces waste.[11]

Sustainable building materials should be produced in a manner minimizing associated greenhouse gas emissions.[12] Commonly used building materials, including steel, concrete, and aluminum, are considered energy inefficient because their production releases large amounts of carbon dioxide into the atmosphere. Cement production, a key ingredient of concrete, is the source of approximately eight percent of the world's total carbon dioxide emissions.[13]

Sustainable building materials should minimize emissions of carcinogens, reproductive toxicants (chemical, biohazardous, or physical agents that interfere with female or male reproductive health or offspring health), or irritants.[14] Building materials play an important role in the health of employees during the manufacturing process and the eventual inhabitants. For example, the emission of volatile organic compounds, including formaldehyde, from materials like plywood and fiberboard can trigger breathing problems, and in cases of high exposure, cause certain cancers.[15] Therefore, to protect human health, sustainable building materials cannot contain perverse pollutants.[16]

The life cycle assessment (LCA) is a popular standardized tool for determining whether building materials satisfy the aforementioned criteria in totality, including by quantifying and comparing the inflows of materials and energy and outflow of emissions throughout a particular material's life cycle. The results can inform the eventual choice of material for buildings.[17]

The LCA methodology has been used to identify several sustainable building materials. In a 2014 LCA conducted by material scientists, the use of hemp-lime, a material made from hemp fibers and lime powder, for wall construction was determined to be carbon neutral over its life cycle.[18] In another LCA conducted by environmental physicists, the use of kenaf fiber insulation boards, derived from the kenaf plant, was found to have a significant reduction in environmental impacts as compared to traditional synthetic materials.[19]

Case Studies

Arlington County, Virginia

Arlington County, Virginia established its Green Building Incentive Program in 1999 for the purpose of encouraging LEED certification.[20] LEED (the acronym for Leadership in Energy and Environmental Design) is a third-party certification program and the globally recognized standard for the design, construction, and operation of green buildings. LEED certification is tiered; buildings incorporating more “green” elements receive a higher rating and corresponding certification.[21]

Currently, Arlington offers site plan developers floor-to-area ratio (FAR) bonuses in exchange for LEED Gold certification, the second-highest possible certification. Also called a density bonus, a FAR bonus is an allowed increase in the amount of building space relative to the area of land on which the building is sited. For example, a developer with a site area of 40,000 square feet that has qualified for a 0.25 FAR bonus would be eligible to have 10,000 square feet added to the building plan relative to the normally-allowed amount.

Site developers in the county may qualify for a 0.25, 0.35, 0.45, 0.55, or 0.70 FAR bonus. Site plan developers can earn increasing levels of bonus for energy efficiency optimization, on-site energy generation or off-site renewable energy purchase contracts, electric vehicle charging stations, and more.

Arlington’s Green Building Incentive Program, revised in December 2020, is more stringent than previous versions. The program has been updated over the years to reflect market acceptance of the LEED program and take greater steps toward Arlington’s emission reduction goals. At the Green Building Incentive Program’s inception, FAR bonuses were available to office buildings that had received LEED Silver certification or above.

Between 1999 and 2020, the Green Building Incentive Program was expanded to include all residential, multifamily, and commercial construction receiving a LEED Silver certification or higher. In total, 92 of the 146 site plans approved by the County Board during that period agreed to achieve LEED certification. Of these 92 buildings, 57 have completed construction, achieved their LEED commitments, and complied with the green building site plan conditions.[22]

1 Strengths

- Direct correlation between the implementation of density bonuses and growth in LEED-certified buildings in Arlington

2 Weaknesses

- Achieving LEED certification requires site plan developers to commit additional time and money to the development process, which may be discouraging

3 Key Takeaways

- Density bonuses are among the most attractive initiatives to site plan developers and can successfully increase green building activities for new development or significant renovation
- A phased-in approach toward more stringent regulations may be necessary as the program gains popularity

Catawba County, North Carolina

The Catawba County green building incentive program began in 2009.[23] It provided incentives to encourage the construction of sustainably built homes and commercial buildings.[24] This was accomplished largely through rebates on various permit fees. A program description states, “Buildings designed and constructed in accordance with the US Green Building Council’s Leadership in Energy and Environmental Design (LEED), NC HealthyBuilt Homes, Energy Star, or the National Association of Home Builders’ Model Green Home Building Guidelines [could] receive a 25% blanket permit fee rebate, not to exceed \$500.”[25]

Jack Chandler, Director of Engineering and Utilities for Catawba County for the last 20 years, described how builders would apply for permits and would have a third-party come out to inspect and certify that the building met incentive requirements at various stages of the building process. Those certifications were then submitted to the county and builders would be reimbursed.[26] All regular fees had to be paid up front, and fee rebates would be issued once projects were completed and certification was verified by third party inspection.[27]

Between 2009-2021, only 16 green incentive permits were issued, a small percentage of the 25,000-30,000 permits issued each year in Catawba county. [28] Low uptake, as well as the changes adopted by the North Carolina State Building codes, rendered the incentive program obsolete.[29] When asked why the program was not as successful as hoped, Chandler pointed to the high cost with little economic benefit for participants as well as the inefficiency of the process.[30]



1

Strengths

- Third-party verification was in place to ensure green building practices were implemented

2

Weaknesses

- Although the paperwork process was simple and smooth on the county's side, the application and certification paperwork and process were inefficient and burdensome for participants. Involving a third-party for checks and balances slowed down project processes
- Benefits were limited to permitting rebates. There were no bonuses like expedited processing or density benefits offered to participants

3

Key Takeaways

- Certification and application process needs to be simpler on the side of builders/developers
- Environmental program success hinges on simplicity and low cost to builders

Scottsdale, Arizona

Scottsdale's Green Building Program, established in 1998, was the first such program in Arizona and the fifth in the nation with an emphasis on residential construction.[31] The Green Building Program was the result of a collaborative effort between a citizen advisory committee and city staff. The citizen advisory committee, comprised of academics, builders, designers, and utility workers, discussed green building incentives and provided political support for a citywide program.[32]

Scottsdale defines "green building" as "[minimizing] the environmental impact of building and site development." The objective of its Green Building Program, which has since expanded to include commercial and multifamily projects, is to encourage environmentally responsible, resource-efficient projects.[33]

Currently, the Green Building Program consists of the following incentives: technical assistance; promotional opportunities for builders, architects, developers, and project owners; and educational programs. Scottsdale offers technical assistance to builders during the qualification and plan review approval process. Once plans have been approved by the city, a green building permit is issued. A Green Building Compliance Certificate and a Green Certificate of Occupancy are issued when building is completed, and those become permanent city records.

Green building construction site signs are available to builders to distinguish their projects from others. Architects, designers, and builders that participate in the Green Building Program are also published on the city's website and made part of informational packets at public events.

Lastly, Scottsdale sponsors educational programs to encourage and inform green building. This includes a monthly lecture series that features information and resources in the areas of site use, energy, building materials, indoor environmental quality, and waste reduction.[34]

Anthony Floyd, Green Building Program Manager for the City of Scottsdale, stated that there has been underwhelming uptake of the Green Building Program's marketing opportunities. The Great Recession disrupted the trend among Scottsdale's developers toward green building. The Great Recession also resulted in layoffs among city staff. This, in turn, has undermined Scottsdale's ability to conduct outreach and raise awareness of the Green Building Program among builders, architects, and developers.[35]

Since 2012, 28 commercial projects and four residential projects have been approved by the city and issued green building permits.[36]

However, other incentives offered prior to 2012 had succeeded in significantly increasing green building within Scottsdale. The city previously offered expedited permit review to those participating in the Green Building Program. Between 1998 and 2006, public acceptance had matured; green buildings comprised approximately half of all building permits filed with the city. Uptake had outpaced the city's ability to process and verify expedited permits, and the program was discontinued.[37]

Still, Floyd recommends expedited permit review as a starting point for cities and localities introducing green building programs. He cites it as especially effective in jurisdictions experiencing extensive development. Floyd also recommends introducing "fee-bates," a financial regulation Scottsdale had previously implemented.

The concept of fee-bates is that the city adds a fee to permit applications not abiding by green building requirements, rather than offering permit rebates to green builders. In Scottsdale, the money collected from fee-bates was used to fund city staffing and increase education and outreach among the development community. While in place in 2010, Scottsdale's fee-bate, officially called the "green building assessment fee," was a minor percentage of the fee; however, this fee could be increased over time to create a greater penalty to non-green builders.[38]

1 Strengths

- Expedited permit review was critical to encouraging green building permit applications at the start of the Green Building Program

2 Weaknesses

- Absent the resources for education and outreach, promotional opportunities alone do not incentivize green building

3 Key Takeaways

- Use of a citizen advisory committee was instrumental in city's adoption of the Green Building Program
- "Fee-bates" are among the most effective policies for a swift transition to green building practices

Chicago, Illinois

Chicago’s Green Permit programs began in 2005 as one part of a larger suite of strategies in the city’s Green Building Agenda.[39] There are two primary programs regarding green building: The Green Permit Benefit Tier Program, and The Green Elements Permit Program.[40] These programs offer expedited permitting for new buildings and a permit fee-waiver for buildings with “exceptionally low environmental impact.”[41]

The Green Permit Benefit Tier Program provides incentives regarding permitting, offering “qualifying projects an expedited permit process and possible reduction of permit fees.”[42] The Green Elements Permit Program provides incentives around reviews, offering priority processing to projects with LEED certification, green roofing, and additional green elements (e.g., geothermal systems, green roofs, solar photovoltaic systems, rainwater harvesting systems, solar thermal panels and wind turbines).[43] The criteria Chicago assigned encompass two of the three elements of sustainable building design: resource efficiency and energy efficiency.

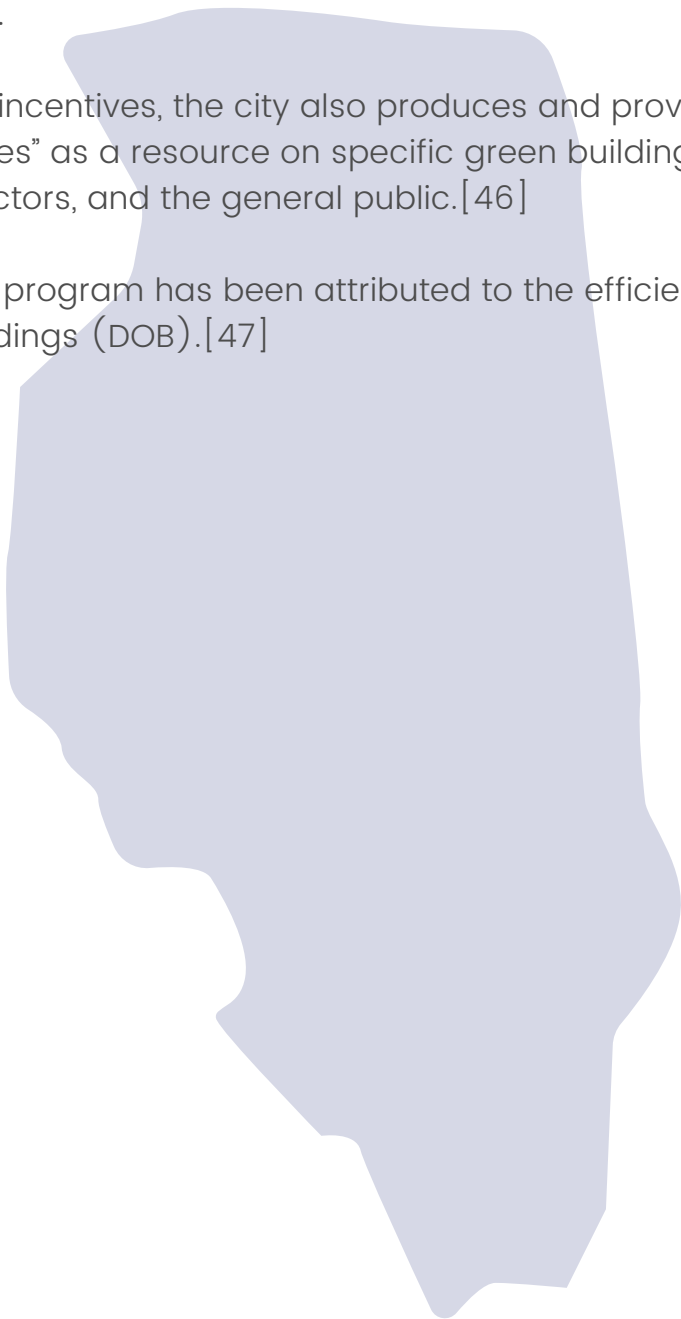
Requirement for expedited permits and review fee waivers are as follows:[44]

Benefit Tier	Requirements
Expedited permit (goal < 30 days)	LEED Certified + 50% green roof + 2 additional green elements
Expedited permit (goal < 30 days) and consultant review fee paid up to \$25,000	LEED Silver + 75% green roof + 2 additional green elements
Expedited permit (goal < 30 days) and consultant review fee 100% waived	LEED Platinum or LEED Gold + 75% green roof + 2 additional green elements

As shown above, projects accepted into the green building program could receive permits in fewer than 30 business days, a significantly shorter time compared to standard timelines of 60–90 days.[45] Also, developers with high levels of green strategy in their development plans were eligible to have their review fees waived.

Beyond permitting incentives, the city also produces and provides “best practice management guides” as a resource on specific green building topics for developers, contractors, and the general public.[46]

The success of the program has been attributed to the efficiency of Chicago’s Department of Buildings (DOB).[47]



1 Strengths

- Shortening permitting processes can help developers save on construction loan interest because they can complete and sell buildings more quickly[48]
- A best practices guide provides developers with education around benefits of green building as well as ideas for what sustainable materials and practices they can leverage and implement

2 Weaknesses

- No density bonuses were offered. Could be missing out on more uptake by including zoning benefits

3 Key Takeaways

- Tiered benefits give developers incentives to consider/ implement more green building practices than initially imagined
- Expedited permitting timelines provides enticing financial benefits and faster ROI

Recommendations

1 Citizen Advisory Committee

Municipal governments within TJCOG can organize and institutionalize a local sustainable buildings citizen advisory committee, which can research and push for sustainable building regulations. The group can consist of representatives of industry partners (builders/developers, architects, engineers), academic experts (architecture, urban planning), community organizations, and environmental advocates.

The citizen advisory committee in Scottsdale, Arizona provided the additional political support needed for the city to implement some of their programs. Interviews with Catawba County officials and sustainability industry experts also corroborated the strategy's rationale and potential for success.

2 Density Bonuses

Municipal governments within TJCOG can offer density bonuses for green building certification. Sample certifications might include the latest versions of the U.S. Green Building Council's (USGBC) LEED certifications (Silver, Gold, Platinum, or Net-Zero), a Living Building Challenge certification, a Passivhaus certification, and/or the WELL certification. Other creative bonuses may be awarded for use of sustainable materials, such as structural timber (cross-laminated timber).

In interviews with Frances Yang (Arup) and Sara Tepfer (Harvard Graduate School of Design), density bonuses were touted as attractive incentives for developers. This strategy has been used in tiered fashion in Arlington, Virginia, a county within a Dillon Rule state, with success.

3

Expedited Permit Review

Municipal governments within TJCOG can provide expedited permit review and technical assistance for green building certification. The permit review process for developments can be a time intensive experience for developers. The process can have significant impacts on project schedules and is viewed as a potentially risky area of the development process. Tying green building certifications to the process supports both industry and local priorities. Offering expedited permit review to ensure a shorter permit timeline can provide developers with an additional layer of security for their project. Pairing technical assistance or additional dedicated government staff support with an expedited process provides an additional de-risking layer.

This process was used in Scottsdale and drove interest at the onset of their program, as well as in Chicago. Yang also noted the usefulness of technical assistance as an opportunity to share helpful materials.

4

Promotional Opportunities

Municipal governments within TJCOG can leverage promotional opportunities for developers of green building sites. This can include offering green building job sites to developers during construction; issuing a Green Building Certificate of Compliance to developers; and listing developers who utilize sustainable construction practices on the government website. Creating promotional opportunities for developers utilizing sustainable practices requires few resources from the local government and will expand access to and knowledge of green building practices.

Scottsdale, Arizona currently offers promotional opportunities for developers of green building practices. While this alone is not believed to spur green building, it has been utilized by site developers within the region. It is a cost offset for the developers, who would otherwise need to spend more on advertising.

5

Fee-bate

Municipal governments within TJCOG can institute a “fee-bate.” For development projects that do not meet sustainability and/or green requirements, A “fee-bate” should be formulated as a surcharge, where the revenues generated are recycled into sustainability program funding.

This “fee-bate” policy was highlighted in interviews with Scottsdale as an efficient method of encouraging sustainable development.

6

Repository of Educational Materials

TJCOG should collect and provide educational documents related to sustainable materials and development practices to distribute to member governments. These materials should include region-specific information about vendor availability for sustainable products, up-to-date best practices in design and development, and case studies of buildings displaying excellence in sustainable design.

Interviews with Tepfer and Yang confirmed the importance of providing centralized, region-specific information to developers. This has been attempted in Scottsdale, Arizona.

Appendix A

Key Terms

Building sickness: condition in which people in a building suffer from acute health symptoms that appears to be linked to time spent in a building

Dillon's rule: the principle that local governments only exercises powers expressly granted by the state

Energy efficiency: using less energy to perform the same task

Fee-bate: fee added to permit applications that do not abide by green building requirements

Floor-to-area-ratio: the ratio of a building's total floor area to the size of the piece of land upon which it is built

Green building: both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition

Home rule: the power of a local city or county to set up its own system of self-government without receiving a charter from the state

LEED: an ecology-oriented building certification program that sets standards used internationally for the design, construction, and maintenance of environmentally sustainable buildings and infrastructure

Life cycle assessment: systematic analysis of the potential environmental impacts of products during their entire life cycles

Resource efficiency: using Earth's scarce resources in an efficient manner

Sustainable building materials: those materials that maximize resource efficiency, energy efficiency, and pollution prevention

Appendix B

List of Interviewees

Name & Contact Information	Affiliation & Title	Rationale
<p>Teri Canada teri@evokestudio.com</p>	<p>Affiliation: American Institute of Architects (AIA), Triangle Chapter Title: Board Member</p>	<p>Ms. Canada is a decorated and respected architect in the region. Her affiliations with AIA, LEED AP (a Green Building certification from the USGBC), and NOMA (National Organization of Minority Architects) are indicators of her relevance and exposure to sustainable building practices and community involvement.</p>
<p>Jack Chandler jchandler@catawbacountync.gov 1-828-465-8940</p>	<p>Affiliation: Catawba County Title: Director of Utilities and Engineering</p>	<p>Jack Chandler has been the Director of Utilities and Engineering in Catawba County for over 20 years. He oversaw their 12 year green building incentive program.</p>
<p>Anthony Floyd antf@scottsdaleaz.gov</p>	<p>Affiliation: City of Scottsdale, AZ Title: Green Building Program Manager</p>	<p>Anthony Floyd is a registered architect and Green Building Program Manager for the City of Scottsdale. He previously served as building official for the City of Scottsdale from 1988 -1995. In 1995, he participated in an international study program focusing on sustainability, development, and global ecology in England, India, Philippines, New Zealand, and Mexico. After returning in 1996, he worked to promote sustainable building practices in Scottsdale. As city liaison to a local citizen group, Anthony helped to establish Arizona's first Green Building Program in 1998.</p>

<p>Pope "Mac" McCorkle mac.mccorkle@duke.edu 1-919-613-7344</p>	<p>Affiliation: Sanford School for Public Policy, Duke University Title: Professor of the Practice</p>	<p>As a former attorney, political consultant, and long-time North Carolinian, Mr. McCorkle's familiarity with the Dillon Rule and its potential applicability to the Triangle helped us tailor our recommendations to TJCOG accordingly.</p>
<p>Sara Tepfer stepfer19@gmail.com</p>	<p>Affiliation: Harvard Graduate School of Design</p>	<p>Ms. Tepfer is a doctoral student at the Harvard University Graduate School of Design. Currently her research sits at the intersection of building science and environmental health science, using building physics to better understand how climate change will increase buildings' susceptibility to mold and moisture issues, and the health effects this may have on human populations.</p>
<p>Frances Yang frances.yang@arup.com 1-415-957-9445</p>	<p>Affiliation: Arup Title: Associate</p>	<p>As leader of the sustainable materials practice in Arup's Americas region, Ms. Yang has extensive experience in leading projects towards lower carbon, more sustainable, and healthier outcomes. Combining her expertise in low carbon materials and advanced use of life-cycle assessment (LCA) tools, Frances has helped numerous projects aggressively drive down embodied carbon within the built environment.</p>

Appendix C

Interview Questions

Interviewee: Pope “Mac” McCorkle, Duke University

1. In simple terms, how would you describe Dillon’s Rule?
2. Is there a “rule of thumb” for understanding when Dillon’s Rule would prohibit a local government from doing something?
3. Is county or municipal control over building standards in NC limited by Dillon’s Rule?, Or, where would the Dillon rule come into play in mandating building materials standards?
4. Would Dillon’s Rule prevent a local government from offering rewards for greener building practices, such as tax abatements or favorable zoning exemptions?
5. Are there certain policy interventions that tend to flare up Dillon’s rule opposition? And is this opposition bi-directional?

Interviewee: Anthony Floyd, Senior Building Consultant at City of Scottsdale, AZ

1. I see that the City of Scottsdale offers a number of incentives for its Green Building Program, including technical assistance, certificate of occupancy, promotional packages, and educational programming. How effective do you think these incentives have been at encouraging green buildings?
2. If the incentives have been effective, why do you think that is? Is there a particular incentive, whether it be the certificate of occupancy or promotional materials, that has been particularly motivating?
3. Do you have numbers on how many green buildings have been constructed since the program incentives were put in place, or know of the percentage increase?
4. How has offering the green building incentives burdened the City of Scottsdale? Has it drawn resources (e.g., staff time, money) from other programs?
5. What was the process of putting the green building program incentives in place like? Did it involve negotiations with the state legislature? Was there debate within the City of Scottsdale?
6. How are building developers looking to take advantage of the program making their buildings more green? Are they getting LEED certified? Are they investing in sustainable materials?

Interviewee: Jack Chandler, Director of Utilities and Engineering for Catawba County, NC

1. What kind of incentives have been offered? Have they been effective and why do you think that is?
2. Do you have any numbers of how many green buildings have been constructed since initiatives were put in place?
3. How has offering the green building incentives burdened Catawba County? Has it drawn resources (e.g., staff time, money) from other programs?
4. What was the process of putting the green building program incentives in place like? Did it involve negotiations with the state legislature? Was there debate within Catawba County?
5. What was the process of putting the green building program incentives in place like? Did it involve negotiations with the state legislature? Was there debate within Catawba County?
6. How do you think the green building program incentives could be improved? Do you think those changes are feasible?
7. How did you get buy-in from the building industry, specifically developers and architects, and what kind of feedback was there?

Interviewee: Frances Yang, Associate at Arup

1. What practices/incentives can be implemented that create the most impact towards green building?
2. What have you seen in the industry that has really helped to incentivize simpler and greener BD&C practices (outside of California)?
3. We are hoping to build a case for policymakers to update local standards and for them to incentivize industry to move accordingly: have you seen any examples that could be good case studies?
4. Do you have a concept of the materials most commonly seen in solid waste landfills? Put another way – what are materials that you wish new buildings avoided and instead moved to in benefit of the project's sustainability?
5. What would be your shortlist of building practices that you wish were more widespread?
6. Which, if any, barriers have you seen to uptake in sustainable building practices in these non-major areas?

Interviewee: Sara Tepfer, Harvard Graduate School of Design

1. We would like to better understand the connections between building materials and health impacts on inhabitants, can you provide us with a quick summary of what your research entails at Harvard?
2. We would like to learn about the AIA Healthier Materials Protocol and how to disseminate it in the Triangle region – can you speak to how you, Frances and the AIA have been working to get practitioners in design spaces and in the AEC industry at large?
3. Do you have a concept of the materials most commonly seen in solid waste landfills? Put another way – what are materials that you wish new buildings avoided and instead moved to in benefit of the project's sustainability?
4. What would be your shortlist of building practices that you wish were more widespread?
5. In your role as a consultant with Arup, could you describe your experience working with developers and with projects in non-major-metro areas? (Charlotte is not within our partner organization's jurisdiction, so we're mostly working with smaller cities.)
6. Which, if any, barriers have you seen to uptake in sustainable building practices in these non-major areas?

Interviewee: Teri Canada, Evoke Studio

1. We would like to better understand who holds influence over design decisions in teams for large development projects. Could you describe your experience as an architectural partner?
2. Which, if any, barriers have you seen to uptake in sustainable building practices in these non-major metro areas?
3. Are there any pertinent relationships that need to be built in the community to foster more productive movement towards more sustainable building?
4. What would be your shortlist of building practices that you wish were more widespread?

Appendix D

Opportunities for Future Research

Our group recommends the following as areas for future research that could be of benefit when considering the policies outlined in our report:

- Understanding any developer concerns specific to the Triangle J region

We did not interview developers in the Triangle J region when developing this report. TJCOG members developing or considering sustainable building material incentivization policies may want to engage with local developers early on in the process to understand any concerns they have that may be specific to this region (e.g., lack of regional availability of certain sustainable building materials, price impacts, etc.). Addressing these concerns through the policy formation process may lead to more effective and impactful policies. Engaging with developers at the start of the process will also help build trust, potentially reducing chances of state intervention as a result of developer concerns.

- Communications with officials in Commerce, Economic Development, or Zoning and Planning Departments

We did not communicate with government partners with purview over city development and government-industry relations in the preparation of this report. We suggest involving region members' relevant governmental stakeholders to ensure that any programs developed have buy-in and support from the appropriate entities. We note interest in Commerce and Economic Development departments due to their industry relationships and partnerships, and access to deployable capital. We advise communications with zoning and planning boards to coordinate alignment between the region's long term strategic growth plans, and possible density bonuses. Zoning and Planning departments have major influence over local development patterns; as such, their participation in initiatives is valuable.

Endnotes

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