Service as a Strategy:

COOL ROOFS

a service blueprint

IMPACT AREA:
sustainability

Cool Roofs is a high-impact service strategy in which the mayor's office engages volunteers to take action to conserve energy, one rooftop at a time.

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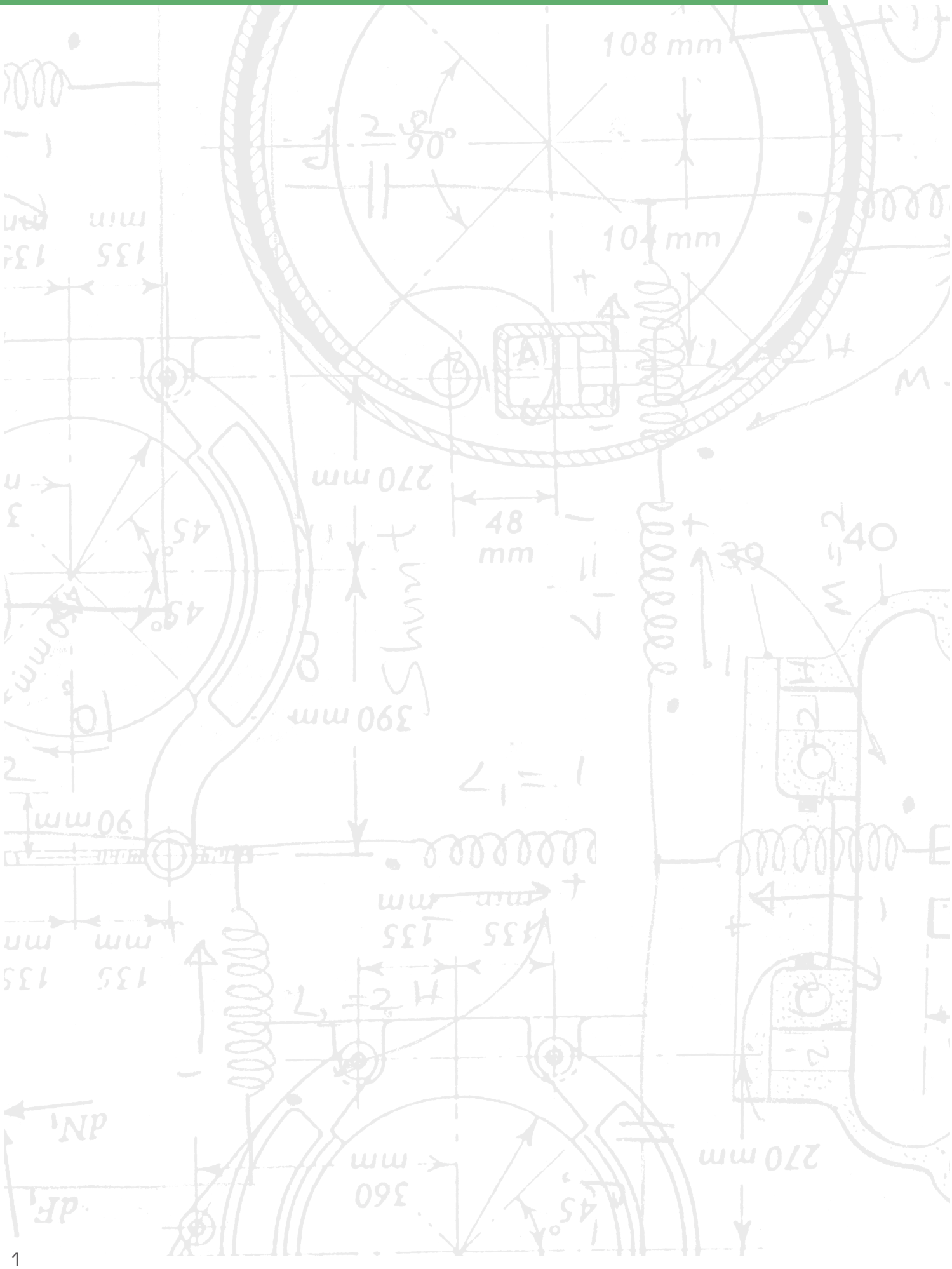
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COOL ROOFS

Cool Roofs is a high-impact service strategy in which the mayor's office engages volunteers to take action to conserve energy one rooftop at a time.

The logic behind Cool Roofs is simple: coating rooftops white reflects the sun's heat, helping the building maintain its internal temperature and thereby reducing energy usage. Reductions in energy demand in turn reduce greenhouse gas emissions and smog, lower the risk of brownouts and blackouts, and cut energy costs during hotter months. This initiative is a great opportunity for mayors to raise the visibility of their sustainability objectives and recruit partners that support the city's goals in that area.

BACKGROUND

Given that air conditioning constitutes approximately 5% of electricity used in the U.S. and upwards of 40% of daily use during hotter months, reducing its usage is an effective way to reduce energy consumption. The benefits of lowering energy usage accrue to the planet through reduced greenhouse gas emissions as well as to consumers of energy through saved cooling costs. A feasible way to achieve these outcomes is to coat rooftops white, transforming them from absorbent to reflective surfaces.

REQUIRED ELEMENTS

1 Mayor's office engages the city's buildings department – or other relevant city agencies – and local partnering organizations to:

a. Establish responsibility for volunteer recruitment and management;
b. Plan for project and site management – including safety management;
c. Ensure that appropriate liability insurance is in place; and
d. Identify sources of technical expertise pertaining to roof tops and special reflective coating.

2 Mayor's office secures resources to acquire all materials needed for the initiative (e.g., reflective coating, coating supplies such as brushes and rollers).

3 Volunteers paint roofs white using a special reflective coating.

4 Mayor's office collects and reports impact for each building coated through the Cool Roofs initiative.

Required metrics include:

a. Number of roofs and square footage coated
b. Reduction in average electricity used per month by building size (square footage and number of units)
c. Reduction in average electricity costs per month by building
d. Reduction in the carbon footprint of each building, based on data related to each building's energy usage (*note: for each square foot of roof coating applied, carbon emissions are reduced at a rate proportional to the building's energy usage – in New York City, this averages about 0.5 lbs reduction per year per square foot of roof coated for buildings that are seven stories or less. As this effect is dependent on the height of the building, shorter buildings receive greater benefits than taller buildings).

EXECUTING COOL ROOFS

Developing the Initiative Plan

1. Conduct an initial planning meeting with all initiative partners. Good potential partners will be organizations with interests in areas such as sustainability, energy conservation, or affordable housing. The planning meeting is an opportunity to:
    a. Introduce partners and clearly define roles and expectations;
    b. Share or develop goals regarding the number of roofs and square footage covered by the Cool Roofs initiative; and
    c. Discuss the city services that will be made available.

2. Determine the number of volunteer hours needed to reach the stated goals (e.g., square footage of roofs to be coated) and identify potential sources of volunteers. Cool Roofs can be positioned as an opportunity for both individuals and groups (e.g., corporate groups, veterans groups, job training programs in clean energy fields).

3. Develop a budget to cover materials and supplies. Investments by building owners, in-kind donations, and discounts should be used where applicable. Supplies might include but are not limited to:
    a. Coating supplies: brooms, hose lengths, nozzles, extension poles, roller heads, mini rollers, power washers, dust pans, wheel tape measures, gloves, suit protectors, special coating (see Resources section for lists of coating manufacturers).
    b. Volunteer/participant supplies: bottled water, sun block, cups, event/sponsorship t-shirts.

4. Create a project timeline, taking into consideration the following:
    a. Cool Roofs is weather dependent, requiring a minimum of 50 degree weather and dry forecasts for a minimum of 24 hours post-coating.
    b. Two coats are required. Depending on progress and weather, it is possible to apply both coats in one day, stopping for lunch, but there are times when it might be necessary to divide the coating between two days.

5. Develop a communication plan to mobilize volunteers/workers and inform, update, and confirm coating schedules and logistics.

6. Determine what building owners will be responsible for as a condition of participation (e.g., paying for supplies, insurance), as well as information they must provide in order to track metrics.

Identifying Buildings

1. In coordination with the city's buildings department or other relevant city agencies, identify which buildings are candidates for coating. Possible criteria include:
   - Whether the building is public or private, as privately-owned buildings are less likely to need the help of a volunteer-supported initiative;
   - Building height, as the reduction in energy consumption tends to be lower for taller buildings;
   - Square footage; or
   - Current A/C usage.

2. Create and implement an outreach and communication plan to connect with building managers, supervisors, or other relevant partners to encourage them to sign up their building. As part of this, building residents and/or employees can be encouraged to join the volunteer effort.

Coordinating City Services

1. Consult with the buildings department and other city agencies to develop a menu of city services that can be offered to facilitate the rooftop coating. City services are intended to complement the volunteer efforts, not replace them, and may include:
   - Providing safety inspectors and conducting inspections
   - Conducting workplace safety training for volunteer project managers
   - Lending safety equipment and any coating supplies
   - Cleaning rooftops
   - Creating safety parapets – wall-like barriers near the edge of a rooftop
   - Providing trash collection on coating days

2. Create and implement an outreach and communication plan to connect with building managers, supervisors, or other relevant partners to encourage them to sign up their building. As part of this, building residents and/or employees can be encouraged to join the volunteer effort.

Managing for Safety on Rooftops

Safety considerations should be given significant attention, including developing a process for conducting safety trainings for volunteers. Each coating project will need to have a point-person on the ground, or site leader, to greet/direct volunteers, manage the day's various logistical components, and ensure proper safety protocols are followed. Site leaders should be trained – typically through an OSHA course – in order to ensure safe working conditions during a roof coating project. These trained leaders can also provide day-of training for volunteers. Further, all coatings must be preceded by a safety inspection and cleaning and washing of the rooftop.

In addition, the mayor's office will need to address any legal hurdles related to allowing volunteers on rooftops across the city. A great solution to this is to find a nonprofit partner that has general liability insurance – with adequate coverage for any potential accidents – to ensure that volunteers are allowed on rooftops. In New York City, a local nonprofit with construction experience was able to provide this insurance.

Securing resources for Cool Roofs

Cool Roofs is a compelling fundraising opportunity for mayors' offices to solicit support from foundations and corporations with a commitment to the city and energy conservation. It is also an attractive opportunity for any corporation interested in funding a day of service for their employees. For instance, a company may sponsor a coating day through the purchase of all the materials and equipment required for the initiative while also having their employees volunteer to do the coating as a day of service. This approach has proven successful in New York City, where 16 corporate partners have provided cash and in-kind donations as well as 30% of the volunteers who participated in roof coatings.

Local businesses, national corporations with local stores, and community foundations are also strong prospective funders for Cool Roofs. When public buildings and housing are targeted, the initiative may be funded by a combination of corporate sponsorships, vendor discounts or in-kind donations, and other private donations. When privately owned buildings are involved, the building owners may be asked to pay for supplies and other costs.

Proposals for prospective funders should describe the opportunity for support and how the funds will be used. The elements of a typical proposal include:

- Description of Cool Roofs
- How this initiative will positively impact the city and the environment (e.g., reductions in energy demand, electricity costs, greenhouse emissions and smog)
- Proposed breakdown of grants and how funds are to be used
- The metrics that will be collected as part of the initiative
- Information on Cities of Service (this is especially helpful for national organizations)
- Recognition plan for the donor (this could include logos on t-shirts if your city is creating them, branding on your service website if you have one, etc.)

Be sure to provide donors with feedback on the results, including photos and metrics information, after the project is completed. In some cases, private funders may not want to provide funding directly to city governments. If that happens, the mayor's office should identify an appropriate nonprofit partner to receive the funds and coordinate disbursements.

Preparing the Site and Coating Roofs

1. Work with building managers, supervisors, or other relevant parties to schedule coating dates and discuss logistics and needs.

2. Order required materials and coordinate with the building manager, supervisor, or owner to ensure secure storage of materials prior to coating crew/execution day, often through the partner responsible for site management.

3. Before the coating day, inspect rooftops for safety, wash roofs clean, set up safety equipment (e.g., 2-3 foot parapets), and divide rooftops into coating blocks that can be worked on by volunteers (e.g., 100 square foot coating blocks). (Note: As mentioned, safety should be addressed across all areas, but at least one partner should assume accountability for safety liability.)

4. Mobilize coating crews on scheduled coating days and ensure proper supervision and safety measures are used.

5. Volunteers coat rooftops under the direction of the individuals and organizations responsible for site and volunteer management.

6. Make adjustments based on progress and weather, including a backup plan for weather changes.

Measuring Impact

Collecting data on the impact of each participating building is critical. The mayor's office or its designated partners are tasked with tracking and publically reporting the following required metrics:

- Number of roofs and square footage coated
- Reduction in average electricity used per month by building size (square footage and number of units)
- Reduction in average electricity costs per month by building
- Reduction in the carbon footprint of each building, based on data related to each building's energy usage (*note: for each square foot of roof coating applied, carbon emissions are reduced at a rate proportional to the building's energy usage. In New York City, this averages about 0.5 lbs reduction per year per square foot of roof coated for buildings that are seven stories or less, such that coating 1 million square feet of roofs in 2011 will reduce 227 metric tons of carbon for the city. As this effect is dependent on the height of the building, shorter buildings receive greater benefits than taller buildings).

(Measuring Impact continued)

To collect impact metrics showing reductions in electricity used, costs, and carbon footprint, cities will need to first assess the baseline numbers for these three categories – after which they can collect follow-up data to track changes in usage, cost, and carbon footprint once the roof has been coated. Baseline data for electricity consumption, and sometimes costs, can often be collected from building superintendents or managers.

Partners responsible for overseeing coating days should submit "before" and "after" photos of rooftops along with photos of volunteers/participants.

Recognizing and Thanking Volunteers

There are numerous ways to recognize volunteer participants who contribute to the Cool Roofs initiative. Following up with participants after the event is encouraged. For instance, consider sending volunteers a thank you card/letter with the details of their coating day (e.g., the site, the supervisor(s), number of square foot coated, an estimate in the amount of energy to be conserved). Before and after pictures of rooftops and a summary of overall energy savings from the initiative may also be included.

OPTIONAL ELEMENTS

Target a Specific Type of Building

A city may wish to focus its coating efforts – along with the related benefits for the building in terms of reduced greenhouse emissions and energy costs – on a specific type of building that reflects city priorities. For example, the mayor's office may choose to target low-income housing, schools, or nonprofits, among others.

COOL ROOFS IN ACTION

Cool Roofs was first implemented in New York City in 2010 through a collaboration of NYC Service and the NYC Department of Buildings. NYC Service partnered with the Community Environmental Center (CEC), which recruited volunteers and worked with Green City Force to coat over one million square feet of rooftops. CEC managed the volunteer process and Green City Force used the initiative as a learning and work opportunity for its job training participants of mostly urban disadvantaged youth who are preparing for careers in the clean energy economy.

Below are some key lessons learned from the first year of implementation:

- Allot adequate time to discuss execution plans and logistics, which requires frequent meetings with multiple players.
- Set ambitious goals.
- Clarify roles and responsibilities on an ongoing basis.
- Be mindful of how weather-dependent coating is and develop schedules accordingly, allowing for postponement and rescheduling.
- Pre-empt logistical challenges with backup plans (e.g., if materials do not arrive in time for scheduled coating or if materials cannot be stored safely on rooftops prior to a day of coating).
- Launch a PR campaign to ensure broad participation of volunteers and suitable buildings (see FAQs under Resources/Technical guidance for rooftop specifications). Allowing local companies to request that their roofs get coated, for example, can help reduce energy consumption for buildings in both the public and private sectors and build broader support for the initiative.
- Identify city or partner organization staffers who are available during nights and weekends – outside of corporate participants who might be available on weekdays as part of a day of service, many volunteers may only be able to coat on weekends.

RESOURCES

- Examples from NYC Service:
  - Communication to the public using social media: http://www.facebook.com/nycservice
  - Technical guidance:
    - http://www.roofcoatings.org (this provides a list of manufacturers)
    - http://www.nyc.gov/html/coolroofs/html/resources/resources.shtml
    - http://www.nyc.gov/html/coolroofs/html/about/faq.shtml
    - http://www.nyc.gov/html/ddc/downloads/pdf/cool_green_roof_man.pdf

- Columbia study on the science of Cool Roofs:
  - http://www.coned.com/newsroom/pdf/Columbia%20study%20on%20Con%20Edisons%20roofs.pdf

- Database of State Incentives for Renewables & Efficiency is a comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency: http://www.dsireusa.org

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