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Creation of a Department of Sustainability and Climate Change in New York City

Final Report: Workshop in Applied Earth Systems Management
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Foreword:

This report is the product of a management simulation conducted as part of the MPA in Environmental Science and Policy at Columbia University's School of International and Public Affairs and Earth Institute. Ten students were asked to take this proposed statute and examine the scientific issues it addresses and then assume that the bill was enacted and implementation would begin on January 1, 2020. As a student of sustainability management, I am deeply interested in the institutionalization of the organizational functions and behaviors that will ensure environmental sustainability. This proposed law details a move from a Mayor's staff office to a Department of the City of New York's government. It is of course up to our elected leaders to decide the wisdom of such a move. Our team simply sought to analyze its feasibility. I believe they have identified some of the choices that such a department would need to make and the steps that would be required to establish the new organization.

— Dr. Steven Cohen

(Workshop Faculty Advisor; Senior Vice Dean, School of Professional Studies)

Message from the Managers:

The Fall rendition of the 'Workshop' allowed us an opportunity to discuss the nature, purpose, and potential of local public institutions in light of climate change threats. Our team dived straight into understanding the political imperatives surrounding this bill, and then followed up with an entire plan for organizational transition and establishment. It was a great learning experience for us to lead this effort with the support of a wonderful group of people, who made shifting between being classmates, friends, and Workshop teammates easy. We are incredibly proud of the heart and collaborative grit this team has given to the analysis of Int 1399-2019 this past semester. We hope that anyone interested in local climate change governance enjoys the read.

— Nuvodita Singh & Daniella Simari
(Students of MPA – Environmental Science and Policy 2020)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report documents our team's efforts and recommendations to institutionalize and operationalize a Department of Sustainability and Climate Change (hereafter "the Department") in New York City, as per a proposed local law that calls for permanence and stability in a municipal apparatus for climate action. Put forward by New York City Councilman Costa Constantinides, Int 1399-2019 is a local bill that seeks to repeal the existing Mayor's Office of Sustainability and create a Department of Sustainability and Climate Change that will adequately address issues of sustainability and resilience to climate change impacts for the city's five boroughs.

This report builds on our last report that identified specific climate change challenges and potential solutions for New York City by delving into the science behind them. In this semester, our team laid the groundwork for implementing the bill by focusing on the organizational aspects. Therefore, this report provides in-depth analysis and recommendations for the Department's program design, interagency functions, improved accountability and key first year milestones for a successful start.

Assuming that the bill passes in the City Council and is signed into law by the Mayor by January 1, 2020, we envision a Department that acts as a systems integrator—a coordinating body of citywide action on environmental challenges, and climate change, and that aggressively pursues these agenda. This will entail an organizational design that enables both inter- and intra- agency collaborations. It will be supported by three strong interagency working groups on environmental sustainability, climate emergency, as well as monitoring and evaluation, that will embed these aspects across policies and programs being implemented in the city. The Department will also expand its sectoral functions by having teams that work explicitly on buildings (represent highest emissions in the city) and communications and outreach (to foster climate justice by establishing a channel for dialogue with communities to better understand gaps in sustainability and climate change adaptation on the ground).

The Department can be expected to expand to 150 people over a three-year period, including the Administrations team. To facilitate this expansion, the Department will need to spend almost 2.5 times the budget of the current Office of Sustainability within the first year, i.e., approximately $42 million. This will be supported by a results-based management approach, and strong performance measurement systems that ensure quality, achievement of sustainability goals, and documentation of lessons learnt in the process.

Overall, the report highlights what the bill mandates, makes recommendations for navigating the political space in the City, and for creating a more robust Department. This would help build a case to support the Department's true purpose: cohesive project oversight, greater internal and external transparency, and allegiance to public accountability.

1. INTRODUCTION: Need for Enhanced Climate Action in New York City

1.1. Climate Emergency in New York City

As a coastal metropolis with over 8 million[1] inhabitants and more than 578 miles of waterfront, New York City is extremely vulnerable to climate change impacts. The 2019 New York City Panel on Climate Change (NPCC) report states that New York City (NYC) will "experience extreme flooding, precipitation, and heat events"[2] as a result of climate change. The sustained increase in average temperatures has effects on ecosystems and on a wide range of natural cycles, including air and water currents; the average temperature of oceans; and the melting of ice in Polar Regions.

According to the NPCC report, the average temperature is projected to rise up to 5.7°F by 2050s, with more frequent heat waves.[3] In an extensively built infrastructure like that in New York City, a third of the temperature rise can be driven by the urban heat island effect. Moreover, the average sea level is expected to rise by up to 30 inches by 2050s, and precipitation can increase by up to 11% compared to the baseline of 2000.[4] This increases the risk of extreme conditions such as coastal and inland flooding, and hurricanes. Although most of the damage is expected to occur in the medium-long term, the effects of climate change can already be observed in the city. The storm surge brought by Superstorm Sandy in 2012 put over 51 square miles of New York City under water—about 17% of the city's land mass. This magnitude of extreme flooding that should occur once every century could occur once every decade.[5]

In June 2019, New York City became the first city in the United States (US) with more than a million residents to declare a "climate emergency" calling for an immediate response to this global climate crisis.[6] To achieve impact at the level of a city, investing in climate change adaptation options is as important as investing in mitigation effort.[7] Mitigation or decarbonization goals require global solidarity for large scale impact. However, adaptation is necessary to achieve a direct and visible line of defense for citizens against climate change impacts. In the summer semester, we considered both existing and potential grey and green solutions towards this endeavor. The city government too has responded to the challenge by enacting multiple policies and programs on sustainability and climate action.

1.2. Existing Institutional Infrastructure for Climate Action

In 2007, under the Bloomberg mayoral administration, the city created the Mayor's Office of Long-Term Planning and Sustainability (OLTPS). The following year, PlaNYC was released.[8] This proposal acted as a holistic vision to mitigate the city's impact on the accelerating climate crisis and simultaneously build a stronger economy with the anticipation of NYC's population growth. It detailed sustainable pathways for various sectors of the city's infrastructure including, but not

limited to, transportation, waste, energy and buildings. Under the organization of the OLTPS, PlaNYC was executed with a notably high level of prowess. The original plan showed serious promise and by 2011, the plan was updated and expanded upon with a two-year goal of implementation by 2013.[9]

Much of this momentum was stifled by the severity of Superstorm Sandy in 2012.[10] Owing to the unprecedented damage caused by the storm, New York City responded with a new plan called *A Stronger, More Resilient New York* in 2013.[11] This approach to climate adaptation and resiliency catalyzed the creation of the Mayor's Office of Recovery & Recovery (ORR) in the following year.[12] While the OLTPS pursued mitigation and sustainability solutions, this new office's agenda prepared New York City for the inevitable climate driven problems that constituents will inevitably experience. Extreme heat waves, rising sea levels, increased precipitation and more severe storms outline just a few of the issues that this office works to prepare the city for. The title of the OLTPS was later christened the Mayor's Office of Sustainability (MOS).[13] The office's functions remained unchanged.

In 2015, the city launched *One New York: The Plan For a Strong and Just City* (OneNYC).[14] Commissioned by the DeBlasio administration, the OneNYC plan has a diverse range of goals that highlight everything from education, community building, economic development, as well as climate mitigation and preparation. With this in mind, OneNYC can be viewed as a foundational guideline for the Mayor's Office of Recovery and Resiliency. The ORR was later re-titled: Mayor's Office of Resiliency (MOR), but the office's functions remained the same.

1.3. Int 1399 - 2019: The Local Law in Consideration

With this framework in place, New York City has positioned itself to be a leader in institutional adaptability with regard to climate change. Climate action taken by local governments has become crucial in the wake of the federal administration under President Donald Trump, who plans to pull the United States out of the Paris Climate Agreement.[15] This political shift is occurring in spite of the recent 2018 report issued by the United Nations' Intergovernmental Panel on Climate Change (IPCC), which explicitly outlines the severity of planetary warming beyond 1.5 degrees Celsius.[16]

Despite New York City's great steps forward, including the recent passing of the Climate Mobilization Act (CMA),[17] increased measures are needed to ensure the sanctity of New York with regard to the aforementioned changes in political and environmental realities. Not only will the city require more capital, communication with constituents, and institutional cohesion, but also protective measures to ensure that if a climate-denying Mayor was to be elected, the past decade of progress would not be shattered. It is most likely in keeping with this sentiment, that a local law calling for the establishment of a Department of Sustainability and Climate Change in place of the existing Mayor's Office of Sustainability was introduced in the City Council earlier this year.[18]

2. INT 1399-2019: CREATION OF A DEPARTMENT OF SUSTAINABILITY AND CLIMATE CHANGE

2.1. Bill Overview

Int 1399-2019 [19] is an NYC local law presented by New York City councilmembers: Costa Constantinides, Helen Rosenthal, and Mark Levine. The law would amend the New York City Charter by repealing the existing Office of Sustainability and replace it with a new Department of Sustainability and Climate Change.

The Department would be headed by a Commissioner who would oversee matters related to resilience of critical infrastructure, the built environment, coastal protection and coastal communities, and climate change. The bill creates a Sustainability Advisory Board with representatives appointed by the Mayor from wide ranging sectors such as environmental justice, planning, architecture, engineering, oceanography, coastal protection, construction, critical infrastructure, labor, business, and academic sectors. An Interagency Green Team will also be established within the department to facilitate the use and piloting of innovative technologies in city construction. The department will create and measure sustainability indicators for the city and publish a public progress report bi-annually. The department will develop and implement a long-term sustainability plan and include projections made by the New York City Panel on Climate Change, as well as 20-year population projections made by the Department of City Planning.

2.2. Key Provisions of the Bill

Section One - Repeals Section 20, Ch. 1 of NYC Charter and enacts the following:

- §3150: Creates the Department of Sustainability and Climate Change and the position of Commissioner at its head, with the option to appoint a Deputy Commissioner of External Affairs.

- §3151: Outlines the powers and duties of the Commissioner, including developing sustainability indicators, coordinating actions that meet the long-term needs of the city, and increasing public education and awareness regarding climate change and sustainability.

- §3152: Creates sustainability advisory committee and requires representation from the Speaker of the City Council and Chairperson of the Council's Committee on Environmental Protection.

Section Two:

- §33-101: Defines commissioner and department.

- §33-102: Establishes **sustainability indicators** to be set and measured by the new department, and establishes bi-annual public progress report to be included in the

Mayor's management report.[20] These sustainability indicators should include but are not limited to:

- o Reduction in greenhouse gases measured by the greenhouse gas inventory

- o Resiliency against sea level rise

- o Protection of vulnerable populations against extreme temperatures

- o Prevention of biodiversity loss

- o Increase in tree quantity and quality within urban forests

- o Diversion of waste from landfills

- o Generation of renewable energy

- o Improvements in air quality

- §33-103: Establishes **population projections** to be released on April 20, 2020 by the Department of City Planning and re-released every two years for a period of at least 20 years.

- §33-104: Establishes creation of a **long-term sustainability plan** from the new department and Commissioner, who will develop and coordinate implementation. The long-term sustainability plan will incorporate the population projections of the New York City Panel on Climate Change for a period of at least 30 years, the above-mentioned sustainability indicators, and interim goals for each indicator. Interim goals must be started or met by April 22, 2030, and long-term sustainability goals must be started or met by April 30, 2050. The Commissioner must first submit an updated plan to the Mayor and Speaker of the City Council by April 15, 2020, and an updated plan at least once every four years afterward. The first report on the city's performance must be submitted by the Commissioner to the Mayor and Speaker of the City Council by April 22, 2020 and an updated report must be submitted every following year on April 22. The Commissioner must seek public input for any updated long-term sustainability plan before submission. The plan must include:

- o Recent reports from the New York City Panel on Climate Change

- o Population projections from the Department of City Planning

- o Geographic and demographic indicators

- o Implementation milestones from the previously-submitted long-term sustainability plan, including additions, revisions, and deletions of any goals, policies, and programs

- §33-106: Establishes that the **sustainability advisory board** will meet at least twice yearly to advise the commissioner and provide updates to this local law.

- <u>§33-107:</u> Establishes the **interagency green team**, which will facilitate the use of technologies, techniques, materials, or products that assist with sustainability and environmental issues and other innovative projects required to meet local regulations. The team will also encourage the piloting of new building technologies and other such innovations.

2.3. Stakeholder Analysis

The bill is being discussed at a time when climate change and other environmental issues have risen on the charts of political agendas across the board. This is evident in the attention garnered by Representative Alexandria Ocasio-Cortez's Green New Deal,[21] a state legislature dominated by Democrats who are seen as supportive of climate action, and most recently the presidential Democratic candidates debating climate action in CNN's Climate Crisis Town Hall.[22]

The bill's primary proponent, Costa Constantinides, has been consistent in raising attention to climate change, most recently introducing bills on slashing building greenhouse gas emissions and encouraging renewable energy technology.[23] He believes that the creation of the Department would strengthen climate action in New York City by mobilizing resources, establishing accountability towards citizens, and pursuing an integrated and coordinated approach to climate action. His goal is that the Department provides permanence and stability to climate action regardless of a new mayor's or new council's perspective and attitude with respect to climate change.[24] Other primary bill sponsors include council members Helen Rosenthal and Mark Levine.[25]

Thus far, the bill has found support from various non-governmental and community led agencies such as Citizens' Climate Lobby, Energy Vision, Green Map System, Action Corps, and Sane Energy Project at the recent Committee hearing.[26] They expressed different levels of dissatisfaction with the current climate leadership and supported the creation of a just, transparent, and overarching department of sustainability that will be able to better coordinate climate action across City agencies. Members of organizations such as Natural Resources Defense Council and New York Communities for Change have also expressed their support.[27]

The bill is currently "laid over in Committee"[28] which means that further action on the bill has been postponed to the next hearing. Crucial for the bill to become a law, however, is the support of at least half of the City Council as well as the support from the mayor who needs to sign off on it. However, the position from the current Office of the Mayor has been ambiguous.

Mark Chambers, the director of the Mayor's Office of Sustainability, questioned at a recent hearing of the City Council Committee if a new department is necessary considering that the existing MOS has the appropriate wherewithal to execute citywide climate adaptation and mitigation plans.[29] He highlighted that the Mayor's Office of Sustainability, Office of Resiliency, and Office of Climate Policies and Programs act together to institutionalize cross-agency climate work, and their coordinated action can respond with urgency to residents' demands. These highlights seemed to render Int 1399 irrelevant, even though Chambers mentioned that the

Mayor's administration was supportive of the goals of the bill to prepare New York City for facing climate change impacts.[30]

The same hearing also included a representative of the New York City chapter of the Democratic Socialists of America who, while she supported Int 1399, highlighted certain concerns regarding the bill. She highlighted the lack of an enforcement mechanism for agencies, and that members of the Sustainability Advisory Board are appointed, and not elected, which may prevent inputs from affected communities from informing decisions.[31]

3. RECOMMENDED ORGANIZATIONAL DESIGN

Our recommendation for the implementation of the Department of Sustainability and Climate Change builds on the mandated program design as specified in the bill, and adopts a more aggressive and integrated approach towards organizational design and functions. This entails expanding the interagency function, identifying and stressing 'climate emergency' as an action area, and focusing on embedding a two-way communication culture or space for dialogue with citizens in order to avoid any gaps in adaptation on the ground.

3.1. Interagency Collaboration

Instead of one interagency green team, our team recommends that there be three **Interagency Working Groups (WGs)** for focused attention to three different but related aspects:

- the **WG on environmental sustainability** will focus on innovative technology and solutions for environmental sustainability and mitigation of greenhouse gases, in consultation with other departments in the city.
- the **WG on climate emergency** will focus on innovative technology solutions for climate change adaptation, resiliency, and recovery in consultation with other departments in the city.
- the **WG on monitoring & evaluation** (M&E) will focus on planning, monitoring and evaluation for the department, and will also focus on transparency & accountability of the work and funds utilization.

The Department is expected to act as a systems integrator that will ensure coordination in NYC's efforts towards climate action. Each of the three WGs will achieve their functions through consultation and relationship-building with other departments and agencies so that the city is able to achieve its outlined targets. By convening regular meetings with representatives from other departments, agencies, and experts, the WGs will communicate new developments and progress made externally, as well as within the Department and its functioning.

3.2. Coordinating Sustainability Functions

The Department will have the following sectoral functions: **waste, transportation, energy, buildings, infrastructure, and communications and outreach** to execute existing projects (all currently found under the Mayor's Office of Sustainability)[32] and new projects that it will take on (Appendix A, *Figure A2*). Buildings represented as much as 67% of the GHG emissions in NYC in 2015,[33] and therefore warranted specific focus, separate from other infrastructure such as sea walls. Under each sector, the Department will collaborate with other departments with related functions. For example, the program on Buildings will collaborate with the City Department of Buildings; the program on Waste will work with the City Department of Sanitation, and so on.

There will be integration between the WGs and sectoral functions as well. Permanent staff from the WG on Environmental Sustainability and Climate Emergency will support intra-departmental

work on mitigation and adaptation across all sectors within the Department. For example, the WG on Environmental Sustainability will support the Transportation team on reducing emissions, and the WG on Climate Emergency will provide support on adapting transportation systems to climate impacts. The WGs will serve as in-house consultants to these sectoral teams, and ensure that the work being carried out is in sync with other city departments as well. The WG on Monitoring and Evaluation will work across all sectoral teams to collect data and report on the teams' progress. They will collaborate closely with the Communications and Outreach sector to draft a public report that will also be shared in the biannual Mayor's Management Report.[34] (Refer to *Figure 1* regarding the collaborative efforts of the WGs and sectors).
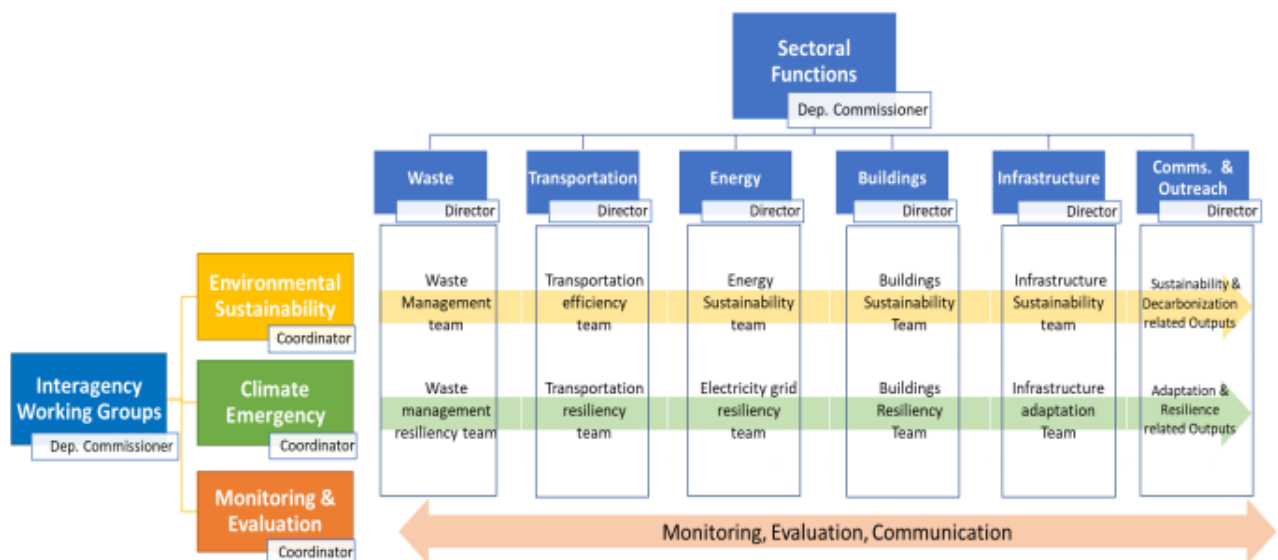
Figure 1: Organization of Functions and Working Groups for the Department of Sustainability and Climate Change. They are coordinated in a matrix to facilitate greater interaction within the department.

3.3. Establishing Dialogue

In taking a more aggressive approach, this Department has increased focus on transparency and accountability towards constituents, as well as an emphasis on climate justice. A Communications and Outreach team will establish two-way communication between the Department and New York City residents through a hotline or online portal. This will allow the Department to not just engage in awareness spreading activities, but also learn and identify adaptation and resiliency gaps on the ground, as reported by residents, making the Department more accessible to the people. This will also give vulnerable front-line communities along New York City's extensive coastline the ability to make their voices heard and effect change within their communities.

4. OPERATIONALIZING INSTITUTIONAL TRANSITION

4.1. Organization and Staffing Plan

In addition to the sectoral functions, the Department will also have an Administration Office to facilitate administrative functions such as Information Technology (IT), Human Resources, Facilities, and Budget. These teams will ensure that substantive work can be carried out smoothly within the Department. (Refer to *Figure 2* regarding the staffing plan to visualize each function and its respective supervisor).
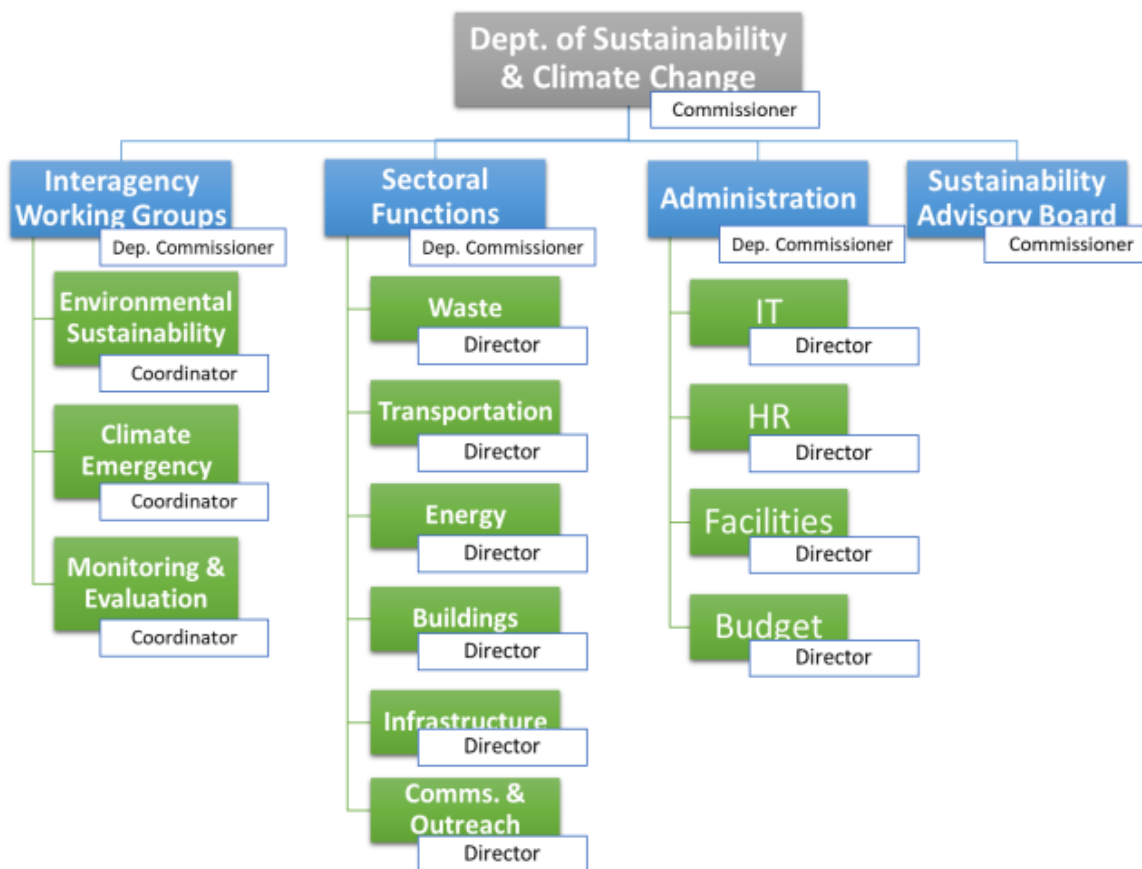
Figure 2: Proposed Organization & Staffing Plan of Department of Sustainability and Climate Change

Combining all the teams, the Department could be looking at a total strength of **150** people including the heads of the different functions and the Commissioner themselves. The main roles include:

- **Commissioner:** The Commissioner would be responsible for all matters relating to resiliency of critical infrastructure, the built environment, coastal protection and coastal communities and climate change. The Commissioner would have the power to develop and coordinate the implementation of policies, programs and actions to meet the long-term needs of the city. He or she is also required to submit an annual report to the Mayor

and the Speaker of the Council on the city's performance with respect to the identified sustainability indicators and long-term planning and sustainability efforts.

- **Deputy Commissioners:** Three Deputy Commissioners will lead the Working Groups; the Administration Office; and the Sectoral Functions. The Deputy Commissioners will oversee the practical implementation of policies, programs and actions as directed by the Commissioner; and ensure the smooth functioning of the Department. The Deputy Commissioners will also act as officers-in-charge when the Commissioner is not in office, and can represent him or her at public functions. The Administration Office in particular would likely be staffed by 10 people under each of its four Directors, leading to a total strength of 44 people under the Deputy Commissioner.

- **Directors:** The Directors will be responsible for specific thematic or functional areas. Each Director will be assisted by a team of 10 people, depending on the area, and will be responsible for hiring those staff and evaluating their performance. This will take the total staff strength across the functional areas to 66. Directors will support the Deputy Commissioners in designing specific projects to operationalize policies, programs and actions; oversee and coordinate the implementation of these projects, as well as monitor their performance.

- **Coordinators:** The WGs will be led by Coordinators appointed by the Deputy Commissioner. Each Coordinator would be assisted by a team of 10–12 people, ending in a total of approximately 36 permanent staff across working groups. The role of this core team will be to convene working group meetings composed of thematic experts from all across other city departments to discuss the latest in technology and innovation relevant to the Department's functional areas. The core team of the working groups on Sustainability and Climate Emergency will then inform the operations of the functions on waste, transportation, energy, buildings, and infrastructure, ensuring that elements of environmental sustainability and climate change resilience is built into them.

As mandated by the bill, the **Sustainability Advisory Board** will meet twice a year and provide sustainability advice and recommendations to the Commissioner. The advisory board shall also include the speaker of the city council or their designee and the chairperson of the council's committee on environmental protection or their designee. This Board will be convened under the leadership of the Commissioner of the Department of Sustainability and Climate Change. It will not have additional permanent staff under its purview.

4.2. Budget and Revenue

The creation of the Department will require substantially larger funds than the budget currently allocated to the MOS. The incremental funds will be used mainly to:

- Hire additional substantive and managerial staff;

- Create an administrative structure to perform functions previously carried out by the Mayor's Office (for example, payroll and IT);

- Carry out additional projects to improve the sustainability and resiliency of the city;

- Deploy a communication and outreach campaign to improve the visibility of the Department, and setup a two-way communication channel with the public.

Currently, the budget of the MOS is approximately $17 million.[35] We estimated that the Department will require approximately $42 million to carry out its activities in the first year of operations.

The new budget would represent an increase of approximately 2.5 times with respect to the old budget, which we consider reasonable for the establishment of a new Department tasked with carrying out new and expanded functions with respect to the MOS.

4.2.1. Budget Breakdown

The budget for the new Department was estimated using both top-down and bottom-up budget approaches, with initial benchmarking derived from comparable NYC departments. Figure 3 provides an overview of budget allocation. (A detailed budget breakdown can be found in Appendix A, *Figure 1A)*.

We considered the following items for the budget breakdown:

a.   Projects [59%]:

The projects carried out by the Department will be those developed by the MOS (11 projects) plus those specified by the bill (3 new projects), for a total of 14 projects. A list of projects to be carried out by the new department can be found in Appendix B, *List 1*.

Figure 3: A breakdown of the budget of the new Department

b.   Contractual Services [21%]:

This is estimated based on the budget breakdown of the Department of Buildings.

c.   Personnel Costs (salaries) [19%]:

While the Department will require approximately 150 staff to operate at full capacity, as described above, we acknowledge that this process will require more than one year. At the end of the first year of operations, we estimate that the Department will have onboard a total of 74 staff, of which approximately 25 will be transferred from the MOS. A detailed breakdown of the staff at the end of the first year can be found in Appendix A, *Figure 2A*, and a breakdown of staff salaries for the first year is shown in Appendix A, *Figure 3A*.

d.   Staff Training [0.9%]:

The Department will deal with several new issues, and the sustainability field is changing rapidly; therefore, staff will need to receive some training to keep abreast of developments in those fields.

e.   Facilities and Equipment [0.1%]:

The Department of City-Wide Administrative Services takes responsibility for centralized purchase and management of workspace, equipment, and utilities, so no budget is expected to cover these expenses. However, we have allocated some budget to carry out communication and outreach initiatives, one of the top priorities of the Department.

4.2.2. Funding Sources

The Department's budget totaling approximately $42 million would come from the following sources:

- *Funds diverted from the MOS*: As mentioned, the 2019 MOS budget is **$17 million**.

- *Apply for new funding:* For the additional $25 million, the Department would have to apply to the New York City Mayor's Office of Management and Budget (OMB) for new funding. The Mayor's Office is funded by municipal taxes, state taxes, and federal taxes.

- *Federal or Private funding:* In addition, the Department could apply for federal implementation grants and work with private companies (public-private partnerships) to carry out its mission.

4.3. Key Milestones

The first year of the new department will be devoted to building up departmental capacity and interagency relationships for long-term success. The Department will start by setting up the different teams, and engaging in consensus building around goals and strategies to achieve them. The department will continue conducting existing programs and launch new programs in the first four months in the spirit of efficiency and responsibility. The first five steps that are prioritized for launching the Department include:

- Appointment of Commissioner and transfer of MOS staff;

- Public Launch Event to announce the creation of the new department;
- The first meeting of three Working Groups and Sustainably Advisory Board;
- Hiring of 44 new staff;
- Publishing of first report on the sustainability metrics under the Commissioner's signature.
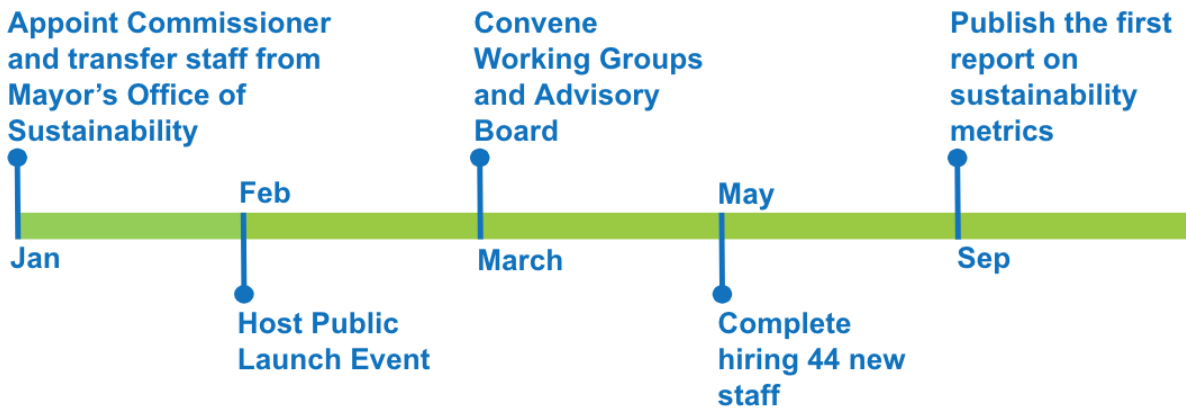
Figure 4: Key Milestones for the first year for the Department

A detailed calendar for the entirety of the Department's first year can be found in Appendix A, as *Figures 4A, 5A and 6A*.

5. MEASURING SUCCESS

5.1 Results Based Management Approach

A key for achieving the new Department's goals is to design systems and procedures for the timely measurement and evaluation of its performance (from inputs to outcomes), while also allowing for pathways to absorb constructive feedback to improve and innovate the processes. In addition to convening working group meetings to track citywide progress on sustainability, the WG on Monitoring and Evaluation (M&E), will be responsible for designing, implementing and leading the Performance Management System for the Department, and will foster innovation inside the organization.

Below is an example of a results framework (*Figure 5*) for the Communications and Outreach function, showing the steps required—inputs, processes and outputs—to reach the desired outcomes: increased citizen awareness about climate change challenges and increased culture of transparency and accountability, for example.
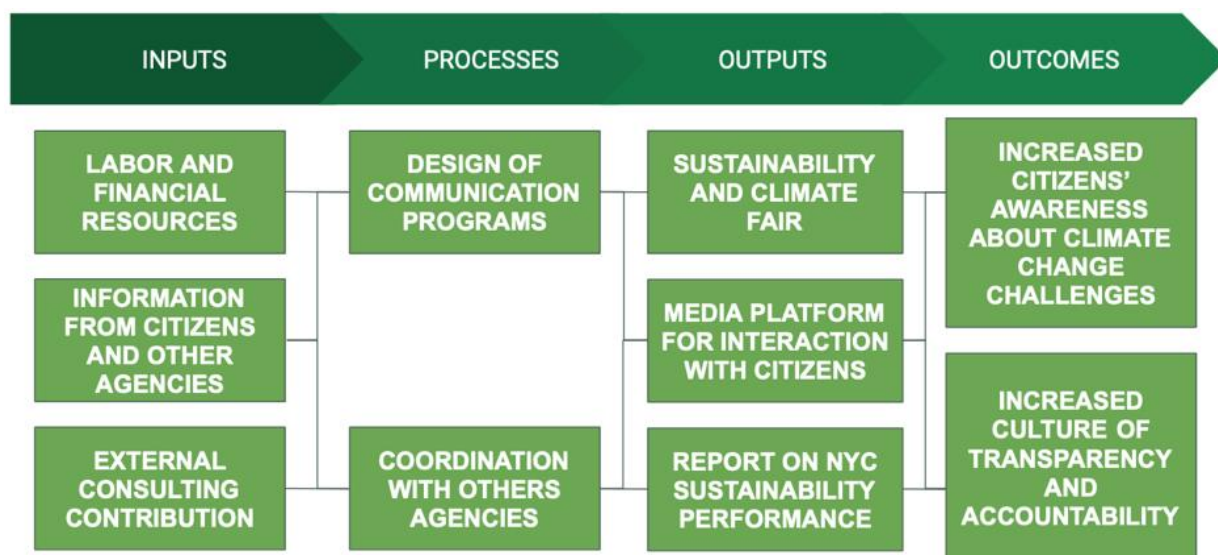
Figure 5: Sample Results Framework of the Communications and Outreach function

The main components of the proposed Performance Management System— measurements, collection, reporting, and feedback—are described in the following subsections.

5.2 Indicators of Program Success

This section looks into how to measure the inputs and processes that will be central to the Department's functioning as well as the specific outputs and outcomes representing the performance and impact of the organization and its programs.

Inputs will be evaluated quantitatively on an annual basis. Examples of inputs' indicators include expenditure per project, staff hours per function, numbers of entries from citizens into the website "comments" section, etc. Processes will be evaluated rather qualitatively on a bi-annual basis and the indicators will evaluate procedures such as trainings for expertise building, public outreach program designing, and coordination with other agencies.

The outputs of the Department are the finished products and deliverables of the department, some of them resulting from the sectoral teams of the Department. An example of output from a program under 'Building' is one from the Retrofit Accelerator program where the output is services provided to building owners, and the indicator is the number of these services provided. On the other hand, the bill also details a set of outputs (and their measurements) that the Department has to produce: sustainability indicators (number of indicators created), a long-term sustainability plan (quality of the plan), the development of new policies (number and quality of proposals) and awareness and education programs (number and quality of programs).

Finally, outcomes can be defined as the changes expected to result from the programs implemented, and as the aimed impacts of the programs lie outside the organization, the measurement process of outcomes will be developed through surveys or other assessments. The Department will work with sustainability and climate change indicators present in the 2019 OneNYC 2050 Strategy Report[36] as it will be co-responsible with other agencies for their progress and evaluation. The following is an example of a OneNYC strategy indicator: square footage of buildings upgraded against flood risks; a scientific indicator proposed in our team's summer workshop: annual square footage of flooding as a scientific indicator; and the OneNYC outcome: increased buildings resiliency against flood risks as an outcome.

5.3 Performance Management, Innovation, Feedback

The M&E team with the Directors and Coordinators will take charge of overall information collection, including administrative and project-based information. With the help of the IT team, an online dashboard for the entry of relevant data will be created generating semi-annual and annual reports based on administrative and project performance data. Secondary sources such as the internal reports of other departments will also be collected by the M&E team to ascertain that the Department's citywide sustainability targets are being met.

Additionally, the M&E team will take the main responsibility of overall performance reporting and monitoring, including administrative and project evaluation. The M&E team will set up monthly, quarterly, semi-annual and annual schedules to collect reporting memos, either in electronic format (hereafter "e-format") or in both paper and e-format, from the heads of functions and WGs. The proposed bill also mandates the following framework for official reporting from the Commissioner: a bi-annual public progress report to be included in the Mayor's Management Report; an updated plan submitted to the Mayor and Speaker of the City Council by April 15, 2020, and an updated plan submitted at least once every four years afterward; and a first report

on the city's performance submitted to the Mayor and Speaker of the City Council by April 22, 2020 with an updated report submitted every following year on April 22.

Finally, the main goal of a performance management system is to evaluate the work done to generate feedback and to improve outcome achievement through innovation. The evaluation will be done vertically by the team Directors, horizontally by the M&E team, and externally from the stakeholders' and citizens' feedback to increase the opportunities for different insights. On the other hand, innovation requires merging new technologies with human capital and human relationship. While requirements in public organizations can burden innovative processes, public managers can create the conditions and circumstances that will foster innovation including creating networks rather than hierarchical relationships, incentivizing intra-entrepreneurship, leveraging disruptive technologies (such as Big Data) and increasing citizens' participation and insights.

6. RECOMMENDATIONS FOR FUTURE COURSE OF ACTION

Before the Department of Sustainability and Climate Change can be set up, Int 1399-2019 must be approved by the New York City Council. Even though no explicit stand has been taken by the current Office of the Mayor, a situation where the City Council needs to override the veto of the Mayor isn't desirable. This would show discord over climate action at a time when all political parties need to rally behind it.

The proponents of the bill will need to lobby for gathering support for the bill to increase its likelihood of being passed. This should extend especially to influential agents and personalities in the climate change sphere both within and outside the City Council, and both at the state and national levels. Furthermore, a good strategy for sponsors might be to frame the bill as being instrumental in achieving the goals of initiatives such as the Green New Deal [37] led by Representative Alexandria Ocasio-Cortez.

The bill could additionally be promoted as a chance for Mayor De Blasio to set a precedent, since this Department, if created, will be the first municipal level sustainability agency of its kind in the United States. Any fears that this bill will take away powers from the Mayor should be allayed by highlighting the influence that the Mayor will continue to enjoy through appointing the Commissioner as well as members of the Sustainability Advisory Board. However, the bill needs to explicitly state the extent of Mayor's involvement in the new Department. Lack of clarity around this can undermine the argument of the Department's separation from mayoral influence.

The Department is expected to be more transparent and accountable to the public on its workings. It could improve citizens' satisfaction and approval. However, the proponents should also take the criticism offered in the latest hearing on the bill and make necessary amendments to it. Specifically, the bill needs to address shortcomings such as the lack of enforcement mechanisms if agencies fail to meet the stated goals.

And finally, it must be highlighted that the new Department will be able to access additional budgetary and intellectual resources, and provide a stronger, more permanent, and stable institutional framework to address climate change impacts for New York City.

7. SUMMARY

With the prospect of the creation of a new Department of Sustainability and Climate Change, New York City stands a chance to be the first city in the United States to have a municipal level agency targeted towards sustainability and climate change. It is not merely a reorganization of the current Mayor's Office and Sustainability. Since the Department will be led by a highly visible Commissioner whose sole priority is ensuring the success of this department and achievement of city-wide sustainability and resiliency goals, establishing a separate municipal agency will allow the Department to have some distance from the mayor's political operations.

In addition, expanding the human and financial resources dedicated to this cause will bring in much needed intellectual and budgetary power that will accelerate the pace of achieving sustainability targets for the city. It could also open up possibilities for accessing funds from external sources. With an expanded scope and a more aggressive programming approach, the Department will be able to lead coordinated interagency action and present a uniform voice on climate change adaptation, strengthening outreach and accountability towards the citizens, setting up two-way channels of communication, and pursuing streamlined and integrated climate action across departments. By focusing on a results-based approach to goal setting achievement, the Department will ensure alignment of goals within the organization and outside too. It will allow for space to incorporate feedback and innovation in its activities, processes, outputs, and outcomes.

The proposed bill itself, Int 1399-2019, represents a larger goal of creating a permanent climate action apparatus at the municipal level. It expects the Commissioner of the Department of Sustainability and Climate Change to present a long-term sustainability plan for the city that would detail interim goals based on sustainability indicators no later than April 22, 2020. Thus, the bill is urgent. It currently stands "laid over in Committee" which means that further action on the bill has been postponed to the next hearing. The proponents of the bill could consider using both soft power to lobby support, and making necessary amendments to the bill for clarity.

Overall, the new Department will extend the ability of the city to meet the needs of its citizens by fully supporting all aspects of policy and programs related to sustainability, recovery, and resiliency, in one committed and integrated department. This report is an attempt to lay the groundwork for such a transition by providing contextual and organizational analysis, and recommendations for action to achieve sustainability and climate adaptation indicators in an effective way.

8. ACRONYMS

- CMA: Climate Mobilization Act

- CNN: Cable News Network

- DSNY: New York City Department of Sanitation

- IPCC: International Panel on Climate Change

- IT: Information Technology

- NPCC: New York City Panel on Climate Change

- NYC: New York City

- NYS: New York State

- ME: Monitoring & Evaluation

- MOS: Mayor's Office of Sustainability

- MOR: Mayor's Office of Resiliency

- OLTPS: Office of Long-Term Planning and Sustainability

- OMB: Office of Management and Budget

- ORR: Office of Recovery and Resiliency

- UN: United Nations

- US: United States

- WG: Working Group

9. APPENDICES

APPENDIX A: Tables and Figures

Line item	Budget estimate (USD)
Facilities and equipment	50,000
Personnel costs	7,942,000
Staff training	370,000
Project costs	25,200,000
Contractual services	8,390,500
Total	41,952,500

Figure 1A. Breakdown of Estimated Budget for the Department of Sustainability and Climate Change.
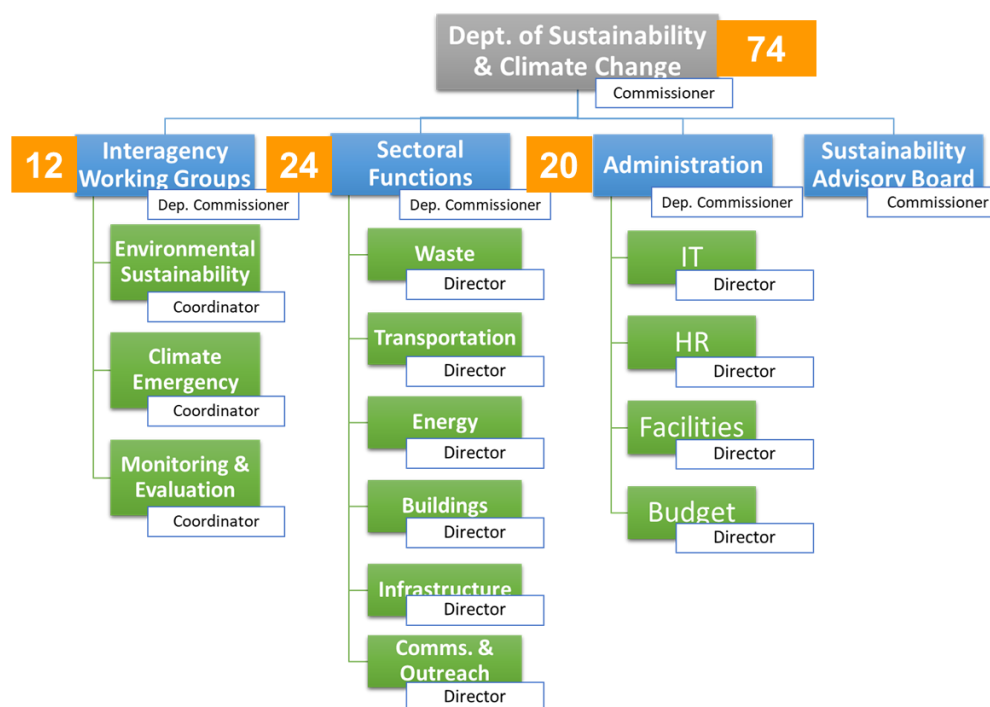
Figure 2A. Organogram of the Department of Sustainability and Climate Change at the end of the first year of operations, showing the number of new hires in the orange.

Position	Staff hired- Jan 1	Staff hired - Apr 1	Staff hired - Jul 1	Staff hired - Oct 1	Total staff (Y1)	Annual base salary per capita (USD)	Total base salary (USD)	Total salary after payroll and benefits (USD)
Commissioner	1				1	220,000	220,000	242,000
Deputy Commissioner	3				3	190,000	570,000	627,000
Directors	3	3	4		10	150,000	1,087,500	1,196,250
Coordinators	1	2			3	150,000	375,000	412,500
WG - senior staff	3				3	130,000	390,000	429,000
WG - junior staff	6	3			9	100,000	825,000	907,500
Functions - senior staff	7	3	2		12	130,000	1,332,500	1,465,750
Functions - junior staff	7	3	2		12	100,000	1,025,000	1,127,500
Admin - senior staff	4	2	2		8	120,000	780,000	858,000
Admin - junior staff		4	4	4	12	90,000	540,000	594,000
Assistant to the Comm.	1				1	75,000	75,000	82,500
Total	36	20	14	4	74		7,220,000	7,942,000

Figure 3A. Breakdown of Salaries for First Year of Operations of the Department

MASTER CALENDER

YEAR 1 GOAL: TEAM UP THE NEW DEPARTMENT AND LAUNCH PROGRAMS

WEEKS

TASKS & RESPONSIBILITY	TASK RESPONSIBILITY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Goal setting, planning and delegation																	
Formal appointment of Department Commissioner	Mayor's Office	▉															
Appoint deputy commissioners to department functions	Department commissioner		▉														
Draft high-level development goals and work plans	Deputy commissioners of interagency working groups and sectoral functions			▉													
Set development goals for next phases	Program leaders				▉	▉	▉										
Stocktaking of existing 10 programs and assigning program leaders	Sectoral directors			▉	▉	▉	▉										
Share draft goals and plans with the commissioner and finalize	Deputy commissioner of interagency working groups							▉	▉								
Create delegation and department launch event	Administration deputy comissioner				▉												
Administration																	
Create job descriptions and hire new employees	HR director & program leaders	▉	▉												▉		
Onboard and train new staff	HR director & sectoral directors	▉	▉										▉				
Generate online database for internal reporting information collection	IT director	▉	▉										▉				
Generate online web portal, hotline and social media acount for public communication	IT director & Communication & Outreach director	▉	▉														
Propose budget of the first year	Budget director							▉									
Propose budget of the second year	Budget director																
Hold monthly public meetings for work report	Administration deputy comissioner								▉				▉			▉	
Managing Existing Programs																	
Assign 3-4 existing MOS employees to each program	Program leaders		▉														
Develop departmental partnerships and carry forward programs	Program leaders								▉	▉	▉	▉	▉	▉	▉	▉	▉
Monthly update of program progress at public meetings	Sectoral directors													▉			
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner																
Managing New Programs																	
Conduct feasibility assessment and due diligence of 4 programs proposals	Program leaders																
Sign memos of understanding and contracts of 4 new programs	Sectoral functions deputy commissioner																
Launch and start implementing 4 new programs	Sectoral directors																
Monthly update of program progress at public meetings	Sectoral directors																
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner																
Reviewing, reporting and reprioritization																	
Monitor monthly information collection and reporting	Monitoring & Evaluation working group coordinator													▉			
Generate quarterly project assesments per sector	Monitoring & Evaluation working group coordinator										▉	▉	▉	▉			
Bi-annual project assessment per sector	Monitoring & Evaluation working group coordinator																
Publish bi-annual report in the Mayor's Management Report	Interagency working group commissioner																
Annual project assessment per sector	Monitoring & Evaluation working group coordinator																
Publish the final annual report in the Mayor's Management Report	Interagency working group commissioner																
Organize annual review and redirect future work	Interagency working group commissioner																

Figure 5A Master Calendar for the First Year of Operations for the Department (Week 17-32)

MASTER CALENDER

YEAR 1 GOAL: TEAM UP THE NEW DEPARTMENT AND LAUNCH PROGRAMS

WEEKS

TASKS & RESPONSIBILITY	TASK RESPONSIBILITY	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Goal setting, planning and delegation																	
Formal appointment of Department Commissioner	Mayor's Office																
Appoint deputy commissioners to department functions	Department commissioner																
Draft high-level development goals and work plans	Deputy commissioners of interagency working groups and sectoral functions																
Set development goals for next phases	Program leaders																
Stocktaking of existing 10 programs and assigning program leaders	Sectoral directors																
Share draft goals and plans with the commissioner and finalize	Deputy commissioner of integragency working groups																
Create delegation and department launch event	Administration deputy comissioner																
Administration	**TASK RESPONSIBILITY**																
Create job descriptions and hire new employees	HR director & program leaders							■		■	■						
Onboard and train new staff	HR director & sectoral directors																
Generate online database for internal reporting information collection	IT director																
Generate online web portal, hotline and social media acount for public communication	IT director & Communication & Outreach director																
Propose budget of the first year	Budget director																
Propose budget of the second year	Budget director											■	■	■	■		
Hold monthly public meetings for work report	Administration deputy commissioner				■				■				■				■
Managing Existing Programs	**TASK RESPONSIBILITY**																
Assign 3-4 existing MOS employees to each program	Program leaders																
Develop departmental partnerships and carry forward programs	Program leaders	■	■	■													
Monthly update of program progress at public meetings	Sectoral directors				■				■				■			■	
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner										■						
Managing New Programs	**TASK RESPONSIBILITY**																
Conduct feasibility assessment and due diligence of 4 programs proposals	Program leaders							■	■	■	■	■					
Sign memos of understanding and contracts of 4 new programs	Sectoral functions deputy commissioner												■	■	■	■	■
Launch and start implementing 4 new programs	Sectoral directors																
Monthly update of program progress at public meetings	Sectoral directors																
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner										■						
Reviewing, reporting and reprioritization	**TASK RESPONSIBILITY**																
Monitor monthly information collection and reporting	Monitoring & Evaluation working group coordinator											■				■	
Generate quarterly project assesments per sector	Monitoring & Evaluation working group coordinator								■	■	■	■					
Bi-annual project assessment per sector	Monitoring & Evaluation working group coordinator												■	■			
Publish bi-annual report in the Mayor's Management Report	Interagency working group commissioner														■	■	
Annual project assessment per sector	Monitoring & Evaluation working group coordinator																
Publish the final annual report in the Mayor's Management Report	Interagency working group commissioner																
Organize annual review and redirect future work	Interagency working group commissioner																

Figure 6A Master Calendar for the First Year of Operations for the Department (Week 33-52)

MASTER CALENDER

YEAR 1 GOAL: TEAM UP THE NEW DEPARTMENT AND LAUNCH PROGRAMS

TASKS & RESPONSIBILITY	TASK RESPONSIBILITY	WEEKS 33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Goal setting, planning and delegation																					
Formal appointment of Department Commissioner	Mayor's Office																				
Appoint deputy commissioners to department functions	Department commissioner																				
Draft high-level development goals and work plans	Deputy commissioners of interagency working groups and sectoral functions																				
Set development goals for next phases	Program leaders																				
Stocktaking of existing 10 programs and assigning program leaders	Sectoral directors																				
Share draft goals and plans with the commissioner and finalize	Deputy commissioner of interagency working groups																				
Create delegation and department launch event	Administration deputy commissioner																				
Administration	**TASK RESPONSIBILITY**																				
Create job descriptions and hire new employees	HR director & program leaders																				
Onboard and train new staff	HR director & sectoral directors																				
Generate online database for internal reporting information collection	IT director																				
Generate online web portal, hotline and social media account for public communication	IT director & Communication & Outreach director																				
Propose budget of the first year	Budget director																				
Propose budget of the second year	Budget director																				
Hold monthly public meetings for work report	Administration deputy commissioner				■				■				■				■				■
Managing Existing Programs	**TASK RESPONSIBILITY**																				
Assign 3-4 existing MOS employees to each program	Program leaders																				
Develop departmental partnerships and carry forward programs	Program leaders																				
Monthly update of program progress at public meetings	Sectoral directors			■				■				■				■				■	
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner																				
Managing New Programs	**TASK RESPONSIBILITY**																				
Conduct feasibility assessment and due diligence of 4 programs proposals	Program leaders	■	■	■																	
Sign memos of understanding and contracts of 4 new programs	Sectoral functions deputy commissioner				■	■															
Launch and start implementing 4 new programs	Sectoral directors											■	■								
Monthly update of program progress at public meetings	Sectoral directors															■	■				
Send quarterly update of programs to M&E team	Sectoral functions deputy commissioner																				
Reviewing, reporting and reprioritization	**TASK RESPONSIBILITY**																				
Monitor monthly information collection and reporting	Monitoring & Evaluation working group coordinator		■			■	■					■				■					
Generate quarterly project assesments per sector	Monitoring & Evaluation working group coordinator					■	■	■								■				■	
Bi-annual project assessment per sector	Monitoring & Evaluation working group coordinator																				
Publish bi-annual report in the Mayor's Management Report	Interagency working group commissioner																				
Annual project assessment per sector	Monitoring & Evaluation working group coordinator																	■	■	■	
Publish the final annual report in the Mayor's Management Report	Interagency working group commissioner															■	■	■	■		
Organize annual review and redirect future work	Interagency working group commissioner																	■	■	■	■

APPENDIX B: Projects Under the Department's Purview

*List 1. List of projects carried out by the Department within the first year of operations. The projects can be structured in the following 5 areas, in line with the functions of the new Department (**new projects marked with ***):*

Buildings:

- Energy & Water Performance Map: For NYC buildings energy and water management comparison;

- Design and Development of Building Policies: Assistance on policy design such as Green Roofs Law (Local law 92, 94) or Building Energy Efficiency Grade (Local Law 96);

- Retrofit Accelerator: Advisory services for building owners with the process of improving energy and water efficiency;

- Carbon Challenge: Public-private partnership with private and institutional actors for the voluntary reduction of their greenhouse gas emissions by 30% in 10 years.

Energy

- New Transmission Lines Planning: Assistance for the design of new transmission lines planning to connect the city with additional renewable energy sources;

- Community Solar: Program allowing the purchase of solar energy credits from projects installed in other buildings. NYC goal to reach 1,000 MW of solar by 2030.

Transportation

- 2 x 20 Bicycle expansion project: Expansion of bike sharing and bike lanes to double the use of bicycle for 2020;

- EV Charging: Partnership with NYC Department of Transportation to install electric vehicle charging stations in the city.

Waste

- Organic Collection network and composting: Network and drop-off sites to increase the percentage of organic collection and composting.

Outreach

- GreeNYC resident engagement program: Education and engagement campaign for easy actions with high impact that will help meeting the NYC Sustainability goals;

- Bring it: Campaign to reduce waste promoting the use of reusable bottles;

- *Develop and follow Sustainability Indicators: Development, monitoring, and publication of a Biannual Report;

- *Long-term Sustainability Plan upgraded every 4 years with the 2030 and 2050 goals establishment and an annual report on the city's performance;

  *Development of new policies and public awareness enhancement.

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