SESSION 2 PANEL AND DISCUSSION

ROSINA ABRAMSON: I'm Rosina Abramson the moderator of this second panel. Before we go back to the printed program I would really like to see a round of applause for Juliette Spertus (APPLAUSE). Ten years from now when New York City is once again the vanguard of the environmental movement and we are whisking our garbage underground, it will be Juliette who we have to thank. So we will remember you well, and thank you Juliette for bringing us all together tonight.

I am the vice president for planning and government affairs of the Roosevelt Island Operating Corporation [RIOC]. This is my second round of duty here; I was president about 20 years ago. And so I've had an opportunity to see the changes, both in New York City—I was also executive director of the Department of City Planning and had some other positions. So I've had the opportunity of seeing how New York city has developed—and also how Roosevelt Island has developed over a long perspective, which comes with age, but also comes with a certain amount of love in terms of the positions that I've had.

And the thing that has always struck me about Roosevelt Island—and I'll give you just a couple of minutes about it—is that it was designed to be technologically innovative. Roosevelt Island was created by the City and the State in an agreement. There was a long-term lease that was signed—it was owned by the City before—and there was a lease signed between the City and the State for 99 years. We are in the 40th year, we've got 60 years to go. And the history of it is that the island was acquired by the City of New York when it was Blackwell's Island in the 1800s. It was farmland. And eventually it became Welfare Island, which is where the city had all its institutions, its mental hospitals, its prisons, its smallpox hospital, a civil war hospital, city hospitals. We've got with us tonight the historian of Roosevelt Island, Judy Berdy, who is head of the [Roosevelt Island] historical society. So it's got a fascinating history for anyone who's interested.

However, by the 1960s New York City had begun to close its major institutions. And social policy, being what it is, began to evolve finally away from institutionalization. And the city ultimately shuttered virtually all the buildings on Roosevelt Island except for the two chronic disease hospitals, which are still there, and began to think about what it needed to do, what it could do with this 147-acre island in the middle of the East River. And it was a confluence of times—the City didn't know what to do this island. The State of New York was experimenting with fast track development, and it invented something called the Urban Development Corporation [UDC].

And in Washington, the President—Johnson at the time—was creating the Great Society, and whatever we think of his international politics with regard to Vietnam, which is a sorry story, his domestic policies and social policies were very good. And part of his Great Society program was the notion of new communities. And there were several experimental new communities that were being developed. And Roosevelt Island is the preeminent urban one. The other ones that may be familiar to you are
Columbia, Maryland and Reston, Virginia.

So all of these forces and thoughts came together, including brutalist architecture which played a major role on Roosevelt Island as well. For those who haven’t come, please come and visit because we are very interesting both architecturally and as community and certainly technologically, which is what we were going to talk about tonight. And all these forces came together and the City of New York handed Roosevelt Island under this 99-year lease to the State. The Urban Development Corporation had just been designed with certain attributes that development corporations in New York City never had before—overriding zoning, overriding the building code, just being able to fast track. UDC—as students of civic history and state history New York might know—fell into financial difficulties in the mid 70s and it halted most of its development. And unfortunately led to the headline that we got from [President] Ford in Washington, “New York Drop Dead.” And that was the period that New York was thought to be failing and not paying its obligations on the bonds. And they largely started out with the Urban Development Corporation bonds.

And Roosevelt Island, which was its preeminent project was by no means its only project. There were probably 20 projects by that point all over the State of New York. But Roosevelt Island became radioactive because everybody saw it, it was in the middle of construction. And there was an assumption that Roosevelt Island was the cause of some of these financial problems, and I think fell off the radar screen. And that is a loss to the City of New York. We’re back on the radar screen. But there’s been a hiatus of several decades where the rest of the city has lost the opportunity to learn from our innovations. And one of those key innovations is the AVAC [Automated Vacuum Collection] system as we call it.

Installed in 1975, we’ve got close to two miles of underground tubes. They hook into what we have now are 16 high-rise buildings on the island. We have between 12,000 and 14,000 people on the island. And the garbage gets whisked at 30 miles an hour. There are several pulls a day, and more pulls on weekends when people are home. And it’s been this extraordinary system that has worked relatively faultlessly. The capital improvements are RIOC’s responsibility. The Department of Sanitation of the City of New York operates it. I think it’s operating with two people. And they’re pulling garbage for close to 14,000 people for the last 35 years.

As new developments come on board—the Roosevelt Island development program is supposed to be done in about ten years and I’m breathless from some of the deadlines, particularly that Montreal has and is saying it met—we’re about 30 years late, but here we are and we’re almost finished with our development. And as the new buildings come on board they hook into this 35-year-old system.

We had the opportunity to take panelists on a tour today. And on the one hand I think it was very reassuring tour when they saw our AVAC system because it works, it’s been working for 35 years, it’s durable. On the other hand I think for some of them it was a trip down nostalgia lane because the system is an antiquated system. The system today, our system, does not
separate garbage, we have one tube. The systems today as you heard can separate garbage and can move it more quickly and this whole notion of retrofitting central city areas and not just leaving it to large, new urban-scale developments I think is an opportunity that all of us should think about. Particularly in New York with regard to the opportunities for the rest of the city.

So that is our system. Juliette has created a terrific exhibit on Roosevelt island. We urge you to come over and take a look at it. For the next couple of weeks this exhibit is there, until the middle of May. And the F train, which you can catch right out here, is very fast and good—runs to Roosevelt Island. Our aerial tramway which is 34 years old as most of you know has been taken out of use for about six months. It should be back at the end of August and totally refurbished; a $25 million project. And that is another incredibly innovative, environmentally sound way of mass transportation. We carry two million people a year. And will be carrying more. We’re opening two new parks. The FDR memorial which has been long awaited, has broken ground. And they’re creating another park on the southern tip. So we want you to come in the next two weeks to see the exhibit. And then we want you to come back again in September to arrive on the new tram and just see how the island works.

Having said that before we turn to our panelists and open it up for questions, we have two representatives from the City and the State of New York to talk about the waste management plans that are going on here. Both the governor and the mayor are both very concerned about the environment and I think that they’ve created some innovative programs. So why don’t we start with Steve Brautigam from the Department of Sanitation of the City of New York.

STEVEN BRAUTIGAM: Thanks, Rosina.

STEVEN BRAUTIGAM: I’m assistant commissioner for the Department of Sanitation—I’m assistant commissioner for environmental affairs. I’ve been with the department since 2002. And I was brought into it to try to help beef up our environmental planning capability while we put together the new landmark Solid Waste Management Plan, or SWAMP as it’s called. So that plan was first announced in 2002 to replace a previous plan that had been announced in and approved in 1992. And we have with us some people, like Ben Miller over here, who were instrumental in putting together the original plan and implementing it.

Not all the elements in the original plan were implemented. And it changed. There were modifications in 1996 and in 2000 other modifications that underwent approvals, and then it came time to have a new solid waste management plan. So Mayor Bloomberg inherited the situation where we had no landfills because the city had decided to close its final landfill capacity after progressively closing one by one all the landfills. One was left, the Fresh Kills landfill on Staten Island, which was the largest in the United States. And it didn’t meet modern standards for landfills with
liners underneath, even though it was upgraded with leachate treatment systems and landfill gas collection systems, so it was closed in March of 2001. And the city also had closed down its system of incinerators over the years, and so we were left with the need for a new plan.

And by closing out the Fresh Kills landfill, this gave rise to transfer stations which had to take the waste from the collection trucks both from the Department of Sanitation fleet and from the commercial fleet, and put that waste in larger trucks to be sent to either landfills or waste energy facilities in the region. So that’s the system that we inherited and wanted to improve with the Solid Waste Management Plan, and through a collaborative process with some of the other folks in this room we came up with a plan that got overwhelming approval from the City Council and from the state Department of Environmental Conservation.

And that’s gonna move us away from using trucks to transport from these transfer stations and instead use rail or barge. And as it’s working out it seems to be mostly rail for privately-owned transfer stations that we will contract with and then we will build four marine transfer stations like mini ports. And on one front we’ll take waste, put it into containers and put it on barge—and then be shipped to another port facility where it can either be put on rail or shipped further distances to disposal locations by barge or rail. So that’s the outline of our Solid Waste Management Plan. But also implementing new measures for recycling—and we have more aggressive recycling goals, and we have a new electronic waste mandate. And stay tuned, that may change in the next weeks depending on what happens in Albany with our state government.

So we deal with about 12,000 tons a day of Department of Sanitation collected waste. And then there are another 38,000 tons of various kinds of waste including 7,000 that are municipal solid waste, like the garbage that we collect. So 12,000 sanitation-managed tons a day, another 7,000 tons a day or so of commercial putrescible garbage.

And then there’s construction and demolition debris waste. And then clean fill waste—if you’re building a building you have to dig up the rock and the earth—that’s a waste as well and it has to be managed. So when we’re talking about the Envac system it’s maybe targeting perhaps 20 percent of our overall 50,000 tons a day of waste that has to be managed in the city—not insignificant—but it’s a larger picture as well.

So right now the waste that the department collects is going primarily to landfills, and about 15 percent goes to waste energy facilities in the region, primarily in Essex County in New Jersey. And that’s 2/3 of Manhattan’s waste that goes to waste energy facilities. So we’re transitioning away from truck-exported waste to rail and barge, and we already have all of the Bronx waste going by rail, all of Staten Island waste going by rail, part of Brooklyn waste, and we’re in the process of negotiating the contract for six more districts of Queens waste to go by rail. And then we’re building these four large marine transfer stations.

So it’s been a long haul, and it’s not an inexpensive plan either, but it’s going to be an improvement to some of the neighborhoods that have
been burdened with some of these transfer facilities and the truck traffic associated with that. So that's been a driving force behind that part of the plan. And that's really dealing with the transfer and disposal part of the plan; it doesn't really talk about the collection piece of it, which is what the Envac system does. And as you may have heard it the Department of Sanitation does provide staffing for the Envac system. We have eight personnel that are dedicated to making it run properly. And there's obviously an expense associated with that. And then the department sends its trucks out and takes the compacted waste in the containers and puts it on our trucks and takes it off to transfer stations, where it's then either sent—I guess in Queens it goes right now out by truck to a landfill 55 miles away in Pennsylvania.

But ultimately under the plan it will go by rail most likely about 650 miles to Virginia to a landfill. So we are dependent on landfills. We have about 12 percent of our waste going to landfills within New York State, about 15 percent or so going to a waste energy facility in New Jersey, currently, and we expect to continue that under the long-term plan. And right now it looks like the landfills will take the remainder of this refuse.

Now this is separate from the recyclables. And we have of course a very extensive recycling program that's separate from the refuse disposal. And that poses something of a challenge for a vacuum system because we have designated metal, glass and plastic recycling, paper and newspaper and cardboard recycling. We have yard waste too, which is a more limited program. And depending on what happens with e-waste that could complicate the matters as well.

So the current system in Roosevelt Island only handles refuse, so we have a separate pick up for recyclables and we would need a whole separate chute. But as we've heard tonight other cities are putting in systems with separate tubes for—

JONAS TORNBLÓM [ENVAC REPRESENTATIVE]: No, one—same tube, separate inlets.

STEVEN BRAUTIGAM: One tube—separate inlets. So depending on the time of day you know it is going to be this kind of recyclable. So I think that's probably enough of my overview. Other than I'll just say—one of the things that this administration, Mayor Bloomberg, has done which I think, as an environmentalist myself, is really visionary is PlaNYC, which is a plan to accommodate a million more people in New York City in the most environmentally sustainable way we can.

And he and city council amended our city charter to create a permanent office of long-term planning and sustainability. And on Earth Day just last month, the mayor announced that solid waste planning is going to become part of the PlaNYC efforts. PlaNYC came out after we had already put together the Solid Waste Management Plan. So it really wasn’t focused first and foremost on sustainability in the sense of reducing carbon footprint and so on. But now there’s gonna be an effort to see what we can
do to modify the plan to make it more sustainable. So PlaNYC is—you’ll be hearing I think more about solid waste in PlaNYC. Our Solid Waste Management Plan is on our website. It’s www.nyc.gov/sanitation. And there’s more information there about our plans and programs and recycling, so with that I’ll turn it over and would be happy to answer questions.

ROSINA ABRAMSON: Thank you, Steve. What we’re gonna do is have one more presentation and then open it up to questions. Steve, as we discussed is a representative from the New York City system. And then works hand-in-glove with the New York State system. Suzanne Mattei is the regional director for this region for the State Department of Environmental...

SUZANNE MATTEI: —Conservation.

ROSINA ABRAMSON: —Conservation. Sorry, Department of Environmental Conservation. We use the acronym so frequently you forget what it stands for. Suzanne, if you could present the State’s...

SUZANNE MATTEI: Sure. Well, I remember one night I was heading out the door for an evening meeting. And my husband said to me, “Are you going to another meeting about garbage?” And I said to him, “Oh no. This meeting is about sewage sludge.” “Suzanne, have you thought about your life?” But in fact, I’ve been thinking about garbage and dealing with garbage for many, many years. And it’s actually a fascinating topic, and it is “Garbage ‘R’ Us.” You know, this is what we do. We do create waste. And wasteful is bad for our environment, it’s also bad for business and for communities.

The Department of Environmental Conservation just yesterday released a proposed new statewide solid waste management plan called “Beyond Waste: a sustainable materials management strategy.” And it’s really a taking a different approach. We’re really trying to look at the front end of garbage. If you have a bathtub filling up with water, you could put a bunch of buckets all around the edges of that bathtub as the water starts spilling over. Or you can go and, you know, turn off the spigot. And that’s generally a better solution.

So we are looking for ways to prevent waste. To increase recycling, but also waste prevention and composting of organic waste and what kinds of opportunities are out there. The plan is very ambitious in terms of its goals. We’re really looking to reduce waste by 15 percent every two years. It’s a very aggressive plan.

But what we’re looking for is a lot of public comment. We want people to come to us with their suggestions and ideas for waste management. And we’re very, very interested in the program that just occurred tonight because collection is something that doesn’t get enough attention. It’s a big, huge piece of the garbage system.

How many people here have been reading stories in the newspaper recently about coyotes in New York City? A few of you have read that. And some of you may know that we have an increasing deer population
on Staten Island. Habitat is decreasing in other parts of the state. Why is Suzanne talking about this, you're asking. Because we're also getting another critter in the city and that is raccoons. And, you know, they are very clever critters. And they love garbage. And they are also a problem because not all raccoons, but some raccoons, also carry rabies. So when I see a system of garbage collection that gets it into a tube and has it underground instead of stuff hanging out on the street, boy, that's something I'm very interested in.

Now New York City is a very dynamic habitat. I like to think of it that way. And the past is constantly confronting the present. Anytime you stick a shovel in the ground you come up with some old spill or perchloroethylene from some old dry cleaner. So it's always a challenge to change or do anything. But the reality is we're gonna have to do a lot of changing in New York City. I think the PlaNYC project that Mayor Bloomberg implemented or has been trying to implement various pieces of it is—at least he's thinking, he's trying. He's one of the few mayors that has a climate change adaption task force.

And when I think about how do we do things differently and can we bring in a system like this for garbage collection, it seems to me that we can start looking for pathways for this kind of innovation. The city is doing a bunch of waterfront management planning right now. Garbage collection and garbage management should be part of that planning process. Are there opportunities in the new kinds of approaches to development, more sustainable development, where we can bring this kind of system into the picture?

I am going to be involved in that planning process. I meet regularly also with the Empire State Development Corporation and the City Economic Development Corporation. So this evening was inspiring to me. And I'm going to want to bring this up and this possibility up in as many nooks and crannies of planning in New York City as I can because this is my turf. I am the regional director for Region 2, which covers New York City. So if it happens on Long Island or in Westchester, it's not my problem. It's somebody else's problem. But I will also be describing this system to other people. The commissioner of the Department of Environmental Conservation, Pete Grannis, came from the Assembly, Roosevelt Island was part of his district. And he's very, very excited about this system and a very strong supporter of it.

So I think that it has a future in New York State. And I think that it can have a future despite all of the problems that go along with doing anything in New York City. I think that this can have a future in New York City. So I am optimistic about it. And I'm very, very pleased to be here this evening and to hear this presentation and to learn more about how it's being used in other areas. So thank you very much.

ROSINA ABRAMSON: Yes, and thank you, Juliette.

SUZANNE MATTEI: Thank you, Juliette.
ROSINA ABRAMSON: Suzanne, thank you. We’re gonna open it up to questions from the audience. But I’m just wondering now that the panelists have had an opportunity to hear each other, whether there’s questions or statements that they’d like to make in response to some of the things that they’ve heard here.

I have a question for Carlos and that is, Suzanne spoke very eloquently about the notion of thinking through collection and New York having to do things differently. One of the concerns we have—when she began to mention that when you dig down you’ll always finding something in the ground, whether it’s an electronic conduit or sewer system. In Barcelona, how was it that you could retrofit an older part of your city? How did you get down and lay all the tubing that’s necessary?

CARLOS VÁZQUEZ: How did we do it?

ROSINA ABRAMSON: Yes.

CARLOS VÁZQUEZ: It’s easy and—it’s easy to answer. We did it with money (LAUGHTER). And we did it [because] we believed it. We believed that it was necessary, not to have a pneumatic system, but to retrofit the city. To retrofit the city brings you to the pneumatic system, not the other [way around], you know what I mean?

ROSINA ABRAMSON: But my question was really more of a sort of engineering, hands on—did you rip up the streets?

CARLOS VÁZQUEZ: Do you rip—what’s...?

ROSINA ABRAMSON: Open the streets?

CARLOS VÁZQUEZ: —Yeah, we opened all the streets. But [the] pneumatic system is not that engineering project. It’s a municipal project. We ripped all the streets—not all together at the same time. Place by place we ripped up the walk...of the street, yes we did it.

QUESTION #1 (Sean Monclus, Envac Canada): ...So for having something more, we don’t want to have only services like in Barcelona and...But we also—when we dig in Barcelona in the street we find the Roman pyres (LAUGHTER). So then all the archaeologists must go there, and the works [is] much more difficult. So this is something you can see directly if you go for example to Santa Catarina’s terminal, which is a big food market. And they have there, for example, the ground made with glass. You didn’t see all these Roman pyres. So how long have you had the Roman pyre here? (LAUGHTER)

ROSINA ABRAMSON: Okay.
QUESTION #2: I have a question about the human level of Envac, on the level that the individual who's throwing away the garbage interacts with the system. It's proven to me that Envac's system increases the amount of recycling, eventually, that people—is actually done by the municipality.

But I'm wondering is it—what about it makes people want to participate and not throw some junk down or throw the trash outside the can? Is it that it's the interface? They're participating in it in a different way? Or is it that the can's always empty? It's always reset and available for them? So it can continue to—without abruptly changing their habits of consumption and throwing away? You know, they don't have to change immediately. They can change slowly. Is this, I mean, I don't know what it is—why does it work?

MIKE YOUKEE: Our blocks in Wembley [London] are mixed blocks. And they're mixed with what we call social housing and [market rate] housing. And a lot of the problems of—the behavioral problems—have been associated frankly with social housing. So the concern the housing managers of the housing associations had was that, for example, the kids would super glue the (LAUGHTER)—that they would put animals inside. They would do—they would try and set fire to these.

What you've gotta remember in highly dense blocks is that they are all overbooked. We tend to go through courtyards a bit like Hammarby Sjöstad [Stockholm]. In the first block we have 22 CCTV cameras. So they might do it once. They certainly will not do it again. And if it's not caught by the CCTV cameras, it would be caught by house neighbors looking out. So we haven't had a major problem.

The problem is that generally in the U.K. you cannot smoke inside public buildings, so people go outside and smoke in courtyards. And so there is a problem continually with cigarette ends, but then you get that on the streets as well. So I don't think that is a major problem. And we found the system—certainly from observation in Stockholm—is an interaction point. We hung around a set of [pneumatic collection] inlets—and talked to Swedes. It's almost that they meet the same people at the same time 'cause they're going to work at the same time.

So I think it is a cohesive process. It is not like going down to a very dark basement and holding your nose, throwing a black plastic bag into a bin then running out. It's a pleasant environment.

QUESTION #2 FOLLOW-UP: But rather than the level of delinquency—is it something about changing your habits? You talked about having the system—this separation system—inside the apartments when they are building it. And that's something to think about.

SUZANNE MATTEI: I would point out just—even when there was a recycling pilot in the 1990s in the Park Slope section of Brooklyn, which was a mixture of density housing and individual housing. It was sort of an
interesting place to do a pilot, and what they found there was capacity does make a difference. You know, the fact that it doesn’t become overflowed. That if you gave people two buckets for recycling they would fill up two buckets. If you gave them one bucket for recycling they would fill up one bucket. You know, it was sort of an if-you-build-it-they-will-come situation. And when it’s easy people do it.

ROSINA ABRAMSON: On Roosevelt Island we do have 35 years of experience. And part of the exhibit is a movie, a video interviewing a lot of the residents on the island, and they have a great affection for the AVAC system. First of all, New Yorkers—at least those who have lived in apartment buildings—are used to going out into the hall and throwing something down a shaft. It used to go to an incinerator—it doesn’t do that anymore.

But people are very appreciative of the fact that it’s very clean, it’s very efficient. There are some lovely vignettes about a gentleman who lost his false teeth, someone else who lost a wedding band. But they’ve become very affectionate. And there are anecdotes about the AVAC system. People remember when it had to be shut down because someone threw massive telephone phone books down it, and then in order to lubricate the system the building management poured water down—all it did was swell the telephone books (LAUGHTER). And people have anecdotes. They’re very affectionate about it and they’re very appreciative.

Judy [Berdy] is not only head of the historical society but lives on Roosevelt Island. Maybe you wanna comment on your experience and what you think the residents feel.

JUDY BERDY: Well, I think they feel—I’ll tell you the truth. I was shocked. I’m in the gallery the other night with the RIVAA [Roosevelt Island Visual Art Association] exhibit. And I’m talking to one of the people who I know personally for 20 years. And she looks around the exhibit, she looks at everything. And she goes, “Is this AVAC on Roosevelt Island?” (LAUGHTER) and I just said, “Yes.” And then I took her to the picture of the building. But some people have no concept—do you still have Disney World or is that there anymore?

JONAS TORNBLÖM: Which?

JUDY BERDY: Disney World?

JONAS TORNBLÖM: Yes, we have it.

JUDY BERDY: Do they still run it?

JONAS TORNBLÖM: They still run it.

JUDY BERDY: Because I went to Disney World—a few years ago—and they
took me back to see AVAC. And AVAC there was nothing special. It's not like a beautiful white building on Roosevelt Island. I went back of Main Street, you know, at Disney World, very secretive. And then there was Mickey and Minnie with their heads off having a smoke—don't take a picture. And then I go in this little green building that is probably about as big as that corner with a room, and that was the entire AVAC. And then we went to see where they had little rooms around Walt Disney World. And the attendants, they would sweep the streets and take the trash and just dump it down. But it was...you know, people had heard about it but no one knew it was there. And it was just completely silent. And for a place like Disney World, it's phenomenal.

ROSINA ABRAMSON: Other questions or comments?

CARLOS VÁZQUEZ: We know in Barcelona, answering your question, that there is no difference about recycling results within the pneumatic system or the traditional system. There is no changing the behavior of the population from our experience. There are no changes of behavior. The people who are recycling with the traditional containers are still recycling with the pneumatic system on the other side. It's our experience.

KEN GREENBERG: I'm just gonna hazard a guess. I think your question is a very interesting one. And I was surprised in Hammarby to see that there was no spillage of rubbish around any of these portals. And I was kind of asking myself why that would be the case. Because whenever you have a garbage room in a building, inevitably, people are a little bit careless or lazy and stuff drops on the floor.

And my guess is that one of the differences is that rather than these being in some hidden place where people are not meant to be, they're very public. They're in the middle of gardens, parks, courtyards. And so people treat them as part of the landscape with much more respect. I suspect that if you put them in back areas with no eyes on them and away from other parts of the public realm you would probably have the same kind of problem.

ROSINA ABRAMSON: Yes.

QUESTION #3: I'd like to hear a little bit about how this seems to work better in the public realm, like for example, in Montreal, where you have such a high population of tourists coming in. Like how do you expect them to learn? And then the park system in Stockholm, like the population using those is very different from the residential working populations of these other areas. Has there been any study on that?

MARTIN MAILLET: First of all, it's sure that we expect many things, but we don't know everything. So what we know—there are a lot of problems with cleanliness and with cans overfilled. So, first of all, we want to manage that.

It's sure that we—and we talk about this with Envac—we have to put
a lot of communication to let the people learn how to use the system. It’s sure that we don’t expect that all the tourists arrive and use it very simply.

So we don’t know exactly, but we also know that we will put a team on the ground. It’s public domain. It’s a zone for festivals. So people from the festival will have staff on site. And actually we work with different organizations to have staff on site too.

So we will see. But it’s sure that we don’t think it will be easy or automatic. So we will see. We don’t know. But we know it’s a very good question, and it’s a big challenge. But we have to learn. And I don’t think that any of the other projects use the system as we want to use it. So we will see.

QUESTION #3 FOLLOW-UP: Louisa...?

LOUISA WASSBÄCK: This project in the park in Stockholm is still not operating; it’s just a plan. And there we’d only have one inlet—no separation in different fractions. And I think the only difference for the people who will use it is that it will be empty (LAUGHING) and not overfull, overfull bins, and not a lot of garbage around it—the birds and rats—and so that will be the difference.

STEVE BRAUTIGAM: I have a question. What does Stockholm do with the garbage that is collected from the system?

LOUISA WASSBÄCK: The garbage that’s collected, it goes to incineration. All of it. But, for example, in Hammarby Sjöstad we separate in three fractions. It’s newspapers and they go to recycling…

STEVE BRAUTIGAM: Paper recycling?

LOUISA WASSBÄCK: Yes. And bio-waste goes to composting and digestion.

STEVE BRAUTIGAM: To make biogas?

LOUISA WASSBÄCK: Yeah, biogas. And the rest goes into the incineration.

STEVE BRAUTIGAM: And you recover energy?

LOUISA WASSBÄCK: Yeah, heat and energy.

STEVE BRAUTIGAM: Heat for the steam system?

LOUISA WASSBÄCK: Yes.

STEVE BRAUTIGAM: For residences?
LOUISA WASSBÄCK: Yes, yes. And also electricity.

QUESTION #4: So a follow up to that—is the biogas that’s made from the waste the same biogas that’s used for the trucks? You mentioned that all of the trucks use biogas.

LOUISA WASSBÄCK: Yes, some of it. Because the bio-waste from the residents, most of that goes to composting. But we also collect bio-waste from restaurants and schools and that goes to...

QUESTION #4: —the trucks and...

LOUISA WASSBÄCK: Yes—digestion, and to make biogas for the trucks and bus system.

QUESTION #4: Thank you.

CARLOS VÁZQUEZ: In Barcelona, all the trucks for waste collection are working with natural gas.

QUESTION #5: Just a quick follow up. So I’m not too familiar with your system, but my question is how often does the system need to be upgraded? And also how is the system itself maintained? Meaning how is it cleaned? Is the system dependent on perhaps the energy or the water sector in order to make sure that it is maintained on a regular basis?

ROSINA ABRAMSON: Well, we’ve got the longest experience, so I’ll answer that. The system has yet to be upgraded. It’s thirty-five years old. Now obviously it doesn’t have the new innovations that the systems today have—we had talked about separation and things of that sort.

But our system has been operating and increasing capacity for 35 years. And, you know, there maybe welding that needs to be done if there’s a crack in the tube. And there are some fascinating stories about finding tall Swedes with shoulders less than 20 inches to be able to go into the tube to do the welding, but it’s really not very difficult in its operation at all. I think there’re some questions over here?

QUESTION #6: I have a question. I’m with New York University and I manage the solid waste here on campus. And as a university we’re kind of considered a city within the city because we are so large, and we do create a lot of waste that has to be transported out. So we deal with the same issues that you’re dealing with at the city.

And I’m wondering, on a university level—we’ve made so many commitments on the climate action side, to reduce our greenhouse gases—so we are looking at our waste management because it is a percentage of our overall total. And so we’re trying to create a waste management plan so we can set some targets for ourselves. And I’m curious if any of these
technologies have been implemented on a university level instead of in municipalities? And then also, the second part would be: if somebody's working on creating a plan, instead of having to redo a lot of studies and look at them, are there good resources that we could tap into coming from the university sector?

JONAS TORNBLÖM: Well, I can answer the question—the first part of the question. We have no schemes in universities in operation anywhere in the world. We have a few science parks, like in Hong Kong—a science park in Hong Kong, and in Singapore, the Biopolis, where there's some research going on—that have adopted this technology. But we have no campuses or universities although it's been discussed many times.

STEVE BRAUTIGAM: You have hospitals?

JONAS TORNBLÖM: Hospitals we have, yes. But no universities. Universities or campuses—yet.

ROSINA ABRAMSON: Yes.

QUESTION #7: I have a question about cost. How much does this thing cost? The smallest system that would be viable for a developer to invest in?

ROSINA ABRAMSON: Well, we've got old costs, which I can share with you. But maybe there are some new costs?

MARTIN MAILLET: I'm an urban planner, not an engineer (LAUGHING) but what it cost me I know. Our project is an $8.2 million project. And it's for, like I said, a system that will work at the beginning at 25 percent of its capacity. So it's 5,000 tons—is that right, Sean? So we can say that around $8 million you can add a system that manages around 5,000 tons...

QUESTION #7 FOLLOW-UP: Per day, per year?

MARTIN MAILLET: Per year?

JONAS TORNBLÖM: Per year.

MARTIN MAILLET: Per year.

MIKE YOUKEE: The costs we've got from Wembley are around 1,000 English pounds, which is $1,500 per dwelling. But the system life would be predicted at 40 years. So you have to amortize that over 40 years. You then need to compare it with a conventional system, which is—figures I tried to show. For example, a dust lorry will last seven years, it's normal life cycle.

So it's quite a complex equation. But the big problem is that whoever
is going to put the system in upfront—local authority or developer—it’s a big initial cost. And that’s why—if you can overcome the problems to do with retrofitting...Of course you’ve got your existing demand from existing customers—there’s an existing set of structural charges.

ROSINA ABRAMSON: I looked up costs and looked at some early studies. Gibbs & Hill was the engineering company that put it in on Roosevelt Island. There’s some early studies in the ‘70s, and they were looking at not just the engineering issues but how to pay for it—the upfront costs were of concern. It was about $5.5 million when it was included in 1975.

But among the schemes they looked at, and I’m wondering if this has been tried anywhere—we didn’t wind up trying it—was the notion of, at least in New York, commercial facilities like restaurants have to have their garbage carted away. It’s not a municipal service, and they pay for the carting service. And so there was an analysis of what it would cost a commercial proprietor—what it cost them on a monthly and yearly basis to have their garbage carted away. And whether or not they could accumulate that money and pay it to the system as part of the upfront costs to help finance the system, then the system would carry their garbage as well.

So there may be ways in terms of entities that do have to pay for garbage removal anyway to think about how to structure some financing systems for the upfront cost. We wound up not doing it, but I’m wondering if there’s experience or thoughts elsewhere.

MARTIN MAILLET: Another important thing—it’s important to remark that a building that decided to connect with this kind of system, freed some space within the building. So we have for example, a big building must have containers and, sometimes, a refrigerated garbage chamber and everything.

So all these spaces, they can use it or rent it. So this has a cost, so we must put everything in the balance to evaluate how much it costs. But I think that it’s the kind of thing that we must calculate and present.

JONAS TORNBLÖM: If you have commercial waste in combination with residential waste, it really sweetens the equation. It makes the economic figures much more attractive because there are larger costs associated with commercial waste now, not only the space requirements, as you mentioned, but also the handling...

ROSINA ABRAMSON:—The carting.

JONAS TORNBLÖM: —the carting and cleaning, et cetera. And many commercial waste operators generate more waste per square meter than household waste. So the more commercial waste you can get into the system the better the price will be for residents.

ROSINA ABRAMSON: Now we’ve had the experience of the state fronting the costs for the entire development for phase one of Roosevelt Island. But in
new development what we have done was deliver the pipes to a point, and as new buildings come in they pay for their hookups. So there may be a way to share the costs.

Perhaps some public entity has to build what’s called the central—what you’ve been referring to as the central—which is the place [the collection facility], and then run tubes to a certain distance. But if you’re doing it on large-scale development like the Atlantic Yards in New York or perhaps the rail yards on the West Side, there might be a way to create the central system and then as each building comes on line connect that.

As an example, the building that is a 500-unit rental that had to bring the hook up from—actually, the AVAC central [collection facility]—to the building in about early 2000 when it went up, paid—they believe it was about $1.2 million for the site costs, for the cost of running the system to their building. And that service is 500 units. So there may be a way to share costs as well.

SUZANNE MATTEI: That’s the way it’s done with sewage systems. You know, the city pays for the sewer that runs down the middle of the street, and the individual property owner pays for the connection.

CARLOS VÁZQUEZ: It’s the same model as Barcelona. The cost is shared by the private and by the public. The public when the pipe goes to the public spaces, and the private when it’s connected inside the building.

ROSINA ABRAMSON: And I think as Dick Anderson said at the beginning there’s, you know, some question in terms of the future of cities and the role of government. The role of government very often is to be the innovator and to take the risk upfront until a system is proven, and then once it’s proven the private sector can pay into it. So there must be some public policy thinking in terms of early investment by the public sector until it’s proven, particularly if there’s a big payoff long-term in terms of the environment and other aspects.

MIKE YOUKEE: This is a particular problem in the U.K. We’re trying to invent a way tackling it in a meanwhile way. By that we mean until something, some funding source is found. Because if you think about it, we have a project which is 67 separate plots, as those plots start to be built without being connected to a system you’re destroying the economic viability of the plots which come later, should you find it.

So we’re working on a system that perhaps having a temporary, instead of a written, bill to all city plots down to a central station, with perhaps 1,000 property capacity, in effect shared for ten years—and then moving that, perhaps recycling the materials. So we are trying to do that. But because of that big upfront swallow it is very, very difficult for the public authority...in the current climate.

ROSINA ABRAMSON: Yes.
KEN GREENBERG: I have a question. Would this be, on the cost side, similar to public transit in the sense that if you have mixed-use and using the transit both ways all the time—because you have people living and working and shopping and recreation and so on—it's obviously much more viable for them if it's a radial system for people who are only traveling in one direction at one time of day and coming back at another time of day. So if you have a mix of commercial uses and residential uses and other things in a dense urban environment does it not then become more financially viable?

JONAS TORNBLÖM: We made studies on shopping centers where we have an economical breakeven point of less than a year. So the more waste and the tighter the space, the better the economics.

QUESTION #8: I have a question, getting away from the costs, but really at the end of the tube, so to speak. What happens—so we're talking about going to composting or waste to energy or incineration as it were—and is that from a central source, you're taking things to a centralized space and doing those activities? Or are you finding—this is maybe more for you guys—a distributed scale of that type of activity? I mean, can you have a building doing its own composting? Or are you thinking municipalities do one composting facility?

LOUISA WASSBÄCK: In Stockholm we take it all the way to one place—composting. But of course you can just—for you to have it in some kind of local composting, that's possible too. And one other thing in the Royal Seaport we have talked about mixed together with the container station for the vacuum system that we should have some kind of...

STEVEN BRAUTIGAM: —Recycling center...

LOUISA WASSBÄCK: —recycling center connected to that. But people can go with either their old sofa—sell and buy things, and not hide this container station away.

QUESTION #8 FOLLOW-UP: Yeah, because—Steve had alluded to it earlier—in New York City we have centralization in certain communities that are overburdened communities that have all this waste sort of brought into them. And then it's handled. So from a social justice point of view, from an environmental justice point of view, it would be great to see it more distributed, equitably, and the Solid Waste Management Plan has taken steps to get there in New York City. But sort of going in this block by block level and particularly how energy production is kind of a hot area right now, I'm wondering if you guys are seeing systems like that or doing systems like that.

ROSINA ABRAMSON: You're talking about smaller scale systems.
QUESTION #8 FOLLOW-UP: Right.

ROSINA ABRAMSON: You know, for a building or a couple of buildings, clusters of buildings.

JONAS TORNBLÖM: Yes, we have systems that are down to a few hundred flats. They're not normally as economic as to have a thousand, a couple of thousand flats. But to try—as I understand your question—was really to try to make them environmental…so to say that they could be self-sufficient in terms of the ability to use the energy for...

QUESTION #8 FOLLOW-UP: —Sure. That'd be great...

JONAS TORNBLÖM: —that's a nice thought. I think many people have played with that thought. And I think we see first steps here—as Lovisa mentioned, if you put in these food grinders, the garbage in the kitchen, flush down organic food waste and then making biogas out of that.

And we see in Hammarby, which Ken told us about, that 1,000 flats use the biogas from the biosolids from the toilet water for the cooking stoves. You know, so that's completed the cycle. And it has been calculated you need as much heating power for your stove as you produce in the toilet today (LAUGHTER). So there are examples.

ROSINA ABRAMSON: So since we've wound up with a very symmetrical conclusion (LAUGHTER)—what I'm gonna suggest is that...One more, we've got one more question—and the food is out there and I think that our panelists have done a fabulous job and need a little sustenance. So we're gonna go out and produce some biogas (LAUGHTER).

QUESTION #9: I'll preface this question by saying that I was one of the people who assisted with some of the research for the exhibition, so I've had a little bit of time to think about some of these issues. But the question I have is one about density. As we, you know, think about where to extend these kinds of systems in the cities, could the panel talk more about how dense the city needs to be to support these systems?

And, in what cases should we also maybe have a different model of how they're used? For example, there are lots of parts of Brooklyn and Queens that are only about two or three stories. So should we be thinking about letting those areas of the city get denser so they could support this kind of infrastructure? That's a question.

ROSINA ABRAMSON: Well, it sounds like there's an assumption that they have to be denser before they can support the infrastructure. So maybe we should take a step back and just address the issue of density. How dense does it have to be to be economic? And I think you alluded to several hundred units?
JONAS TORNBLÖM: We say the density—we should be at least three or four floors—high buildings. But then the denser it gets, and here in New York you certainly have enough a density to make this work. At Wembley [London] we're building houses from five, six up to 30 stories, something like that. It's a medium sized density for a New York comparison, and the denser it is, the lower the costs will be per flat.

ROSINA ABRAMSON: But what I think I'm hearing in terms of your question and your question is the notion of taking district heating and seeing whether you can do district garbage collection as well. Maybe the same math that you do to figure out how economical is it to do—and how dense does a district have to be for the heating to be self-sufficient would be the same kind of analysis with regard to garbage collection. Because you do reduce the size of the compacter—everything is reduced when you're working on a smaller scale.

Let's go produce some biogas and we'll talk it over (APPLAUSE). Thank you everybody (APPLAUSE).