RICHARD ANDERSON: Well, good evening everybody. I hope you're enjoying this wonderful weather. Fast trash—I think that's a wonderful title. To me the topic is really about the role of infrastructure in the growth and change of cities. Does infrastructure, in your mind, lead or follow? Does infrastructure shape cities or is infrastructure shaped by cities?

I think as I'm speaking you're probably all thinking of illustrations of transportation that went out into cornfields and development followed. And other cases where development was put in a sprawling fashion and then we tried to build sewers and water supplies to serve it.

So the relationship between infrastructure and cities is a time honored one. It's one that, generally in my mind, has been critical to the success or the preeminence of cities around the world. But the cities that have done the best job in putting infrastructure in place generally are the cities that we admire.

If you look at a city like Paris, Paris has led with its infrastructure. Paris, and frequently, much more frequently than other cities, has been at the forefront of thinking about where it wanted to go and put the infrastructure in place. It's done it very well in recent decades. Tokyo is another city that has been leading with its infrastructure—putting it in place to serve the planned development that it wanted to occur.

So the topic tonight, even though it's a subject where we have not done as much planning as we have with transportation, and water supply, and sewerage and activities like that, is equally a relevant subject to how we collect trash and shape cities.

And what we have is a panel of people who know about this topic from around the world. And I believe that it's about waste collection as a part of urban design. How do we design our communities with waste collection built into the process? And that's not done very often. I think most of you who have heard about the Roosevelt Island experience, and you'll hear more about it tonight if you haven't earlier, that has been, definitely been, the exception.

So generally what we do is we build cities with certain infrastructure involved, most of it not. And then we play catch up. And nowhere do we play more catch up than we do with solid waste collection and disposal. And the experience of New York City is at best bizarre, when you think of how this great city has grown and prospered as a result of infrastructure, but in spite of waste collection.

We've made decisions in solid waste collection and disposal for this city that to me are really hard to fathom. And now even today we've just patched together a system of collecting our solid waste, putting it on trains at night, shipping it out to Pennsylvania and sort of out of sight, out of mind. But it's certainly not something that has been planned in a proactive fashion.

So I'm going to be followed by Mike Youkee from London, and I'm going to tell you a word about Mike and then each of the others who are after him. Mike Youkee has worked in London housing development for 40
years. His experience in recent years has been in new housing construction and major refurbishment, principally in London. He was a member of the staff of the Greater London Council, when we had a Greater London Council, and he held a number of positions in that fine organization.

He’ll be followed by Carlos Vázquez who is from the city of Barcelona. He’s head of waste management for the City and his responsibilities include defining the policies and collecting system to improve technology, to improve recycling and sustainability. He’s worked in Barcelona since 2000.

He’ll be followed by Lovisa Wassbäck who works for the Traffic Administration of the City of Stockholm, and is head of the section for planning and development for waste management. During the last year she has been responsible for investigating the possibility of a change to municipal ownership for the vacuum waste systems in Stockholm.

And our final speaker from the four cities is Martin Maillet from the city of Montreal. He has had the opportunity to work on some of Montreal’s recent major urban revitalization projects as an urban planner for the city of Montreal. And he is currently senior manager for the Quartier International of Montreal, one of the most important urban revitalization projects in Canada.

And then our cleanup hitter will be Ken Greenberg, architect and urban designer from the city of Toronto. He is former director of urban design and architecture for the City and principal of Greenberg Consultants. For over three decades he has played a pivotal role in public and private assignments in urban settings throughout North America and Europe.

And then finally, after this opening session, we’ll have a break. And then a wrap up panel and panel discussion moderated by Rosina Abramson from the Roosevelt Island Operating Corporation. So without further ado, I’d like to turn to our speakers and start with Mike Youkee. (APPLAUSE)

MIKE YOUKEE: Thank you very much. I’d rather be here at this time than in the UK ‘cause they’ve just started counting for the general elections (LAUGHTER) and also we have our London municipal ballots elections at the same time. My wife is a supervisor in the election. She works for the London borough of Richmond and she will be in a very, very bad mood in about 15 hours’ time having been up all night and not having access her mobile, internet, etc. So I have no idea what’s going on in the election.

You can see from the script that effectively I have worked on both sides of this equation, as a client of Envac’s to introduce a system for the first time into the U.K., and also I’m now, having been shaken out in the meltdown in 2008, I now provide some consultancy services to Envac to help them rollout the system in the U.K. I also chair the Mayor of London’s Developer’s Group, which is a consultation body about stepping up the numbers of housing units across London, which are pitifully low.

But just before I start, a small story about Boris Johnson, and he’s a very, very popular and well-known figure in London because he’s a chap of about 6’3” with a shock of blond hair. He went recently down to the London borough of Newham. We’ve got 33 boroughs here in London, and a Greater
London Authority, of which he is the mayor.

So each of those 33 boroughs has their own mayor. He and the mayor of Newham were opening a facility, I don't know whether it was waste or whatever it was, and the mayor of Newham did the initial speech and Boris stood up and said, “I suppose you could be or you're wondering why we’ve got two mayors here. Well, Sir Robin here is your day mayor, I am your nightmare.” (LAUGHTER)

So a little history, the Magna Carta, 1215, is a founding constitutional document in the U.K. My friend here Jonas Tornblöm [representative from Envac] told me that it was included, that waste provisions were required to be included in that. He's actually wrong. The original document was then superseded by a document in 1297, so before 1300 there were requirements, certainly in a European, historically proven context of residents and property occupiers, to do something about their waste.

So we've got a long track record. We also have a fascination with rubbish. And we don't call it garbage or trash. We call it rubbish. So Lonnie Donegan was a popular singer in the 1960s and he sang a song called “My Old Man's a Dustman.” He wears a dustman's hat, he wears cor blimey trousers, and he lives in a council flat.

So these guys, the guys who collected the waste, were very very much part of the municipal urban elite, they were the top of the pecking order in terms of status as a kind of workers. There was also a TV show called “The Dustbin Men” in the 1970s. Dustbins and collection, waste collection and comedy, if you will, in Liverpool.

So effectively the system changed little from the 19th century. In the 20th century garbage collection effectively replaced the horse and there was less handling. In the U.K. and a lot of places it's principally local authority responsibility, at least to collect residential trash or garbage, or use your terminology.

So what are the 21st [century] drivers in terms of thinking about waste in new construction, new development? Well, health and safety and manual handling and burning control could be—we were walking back from Little Italy last night and I nearly stepped on a cockroach because of the trash laid out, and that's a common problem on the streets of London, Westminster, Central London. We're behind you in terms of densification, in terms of the numbers of dwellings we're sticking or putting onto plots. So densification means that you've got critical mass for these sorts of systems.

Developers and landowners now lead, it's not local authorities. The traditional model for Envac was to sell systems to local authorities across Europe, where the local authority all paid for systems to collect waste. Big new schemes, certainly in the U.K., are developer-led and effectively a developer has to cover all the problems which arise, including contributions for transport, education, etc. So the implications of development fall to the developer.

I think we're seeing as well a 21st century driver: communitization of infrastructure and services. By that I mean we had a fashion in the 20th century U.K. for even people living in blocks of flats to have their own...
separate central heating systems, hot water systems. You’ve got a long and honorable tradition of community heating systems, district heating. We just don’t have that in the U.K. We had it before the Second World War. We seem to have lost that.

Now with the environmental agenda on the horizon, we are bringing together those services. Once you start having depots for things like your district heating plant or anaerobic digester, then you’ve got a little area which is not suitable for anything else, you can start thinking about waste transfer. They go together. So you’ve also got a huge climate change agenda, i don’t need to tell you people, and to my surprise Envac is a major contributor in alleviating climate change functions.

So when I was head of housing at Quintain [Estates LLC], this development was proposed: 4,200 apartments, thirty-five percent were affordable housing, significant retail, office, hotel, student accommodation, and leisure. So a true mixed-use development. Generally apartments on the top floor and other uses at ground level. It is adjacent, and you can see that big arc [image of stadium in slide], to the new foot—soccer, I’ll use the word soccer rather than football, less confusion—soccer stadium. And Wembley is the national stadium, the most famous soccer stadium in the world.

And that was redeveloped, I would say that, but it is true. It was redeveloped three years ago. Quintain, a company I worked for, owned all the land, 120 acres, around [the stadium]. So we are in the public realm, where we felt [it was] inappropriate to have dwellings extending down to the ground floor with 92,000 soccer fans coming on a regular basis to events there.

So that’s what it looks like. Richard Rogers master planned it and it’s not remarkable in terms of its design. There are a fair number of schemes which look like that. Our waste strategy at the time was simply conventional. So we got our planning consent, that’s the big thing, that’s the big tick in the box if you’re a developer. You’ve secured your line and your land value’s gone up, and that’s important for your price in the stock market.

And that was a post outline consent decision. I took a trip [to] Hammarby [Sjöstad] in Sweden with a group of architects and saw Envac. My disappointment I suspect, I’ve built probably 20- to 25,000 homes across London in my time, the disappointment always is, when you get there, the trash, the abuse of the system, the inability to keep it clean.

So when I saw Envac I thought we’ve gotta have that. And it related not just to making sure it was treated properly. Then there’s the visual, there’s nothing worst than seeing black sacks on the street, odor, traffic—you know the backing up of traffic, the lorry down our narrowed streets, the storage problems that you have with waste.

Again, at Wembley we had public realm issues, as many larger mixed-use developments actually are retained by the developer for long-term management. We don’t trust local authorities to manage them, we will not allow the local authority at Wembley to clean the streets or provide the public lighting. So we have a system where the roads and the surfaces are not adopted by the local authority, because we simply do not trust them to
clean up after a Wembley Cup Final and all the ensuing chaos on the street.

And that's a critical issue for mixed-use developments in the U.K. Generally the larger schemes are retained for longer-term management, and they are also—we talk about towns as businesses—they are. These are not simply housing developments where the product is sold and the development moves to another site, these are long-term businesses and they are true developments—development investments. So that's different terms. We don't want local authorities fighting to collect rubbish on the street. So Envac is critical to securing that.

As part of the evaluation we did, there are space savings. You don't need lots and lots of rubbish rooms where, in the bowels of the block you live in, you run down there holding your nose, lob a 60-liter plastic bag into the receptacle, run out as quickly as possible before you get mugged or something dreadful happens there.

We don't have to have those. There are massive janitorial savings. We don't have guys pushing and pulling these wheelie bins up to street level so they can be picked up by the dust lorries. So those savings were taken into account when we appraised the upfront investment required for Envac.

So what do we have [at Wembley]? We've now got over 500 units in management under the Envac system, and we've massively increased recycling. The Mayor of London currently is trying to knock up the recycling rates in highly mixed-use, mixed-tenure, dense apartment blocks from 10 percent to 15 percent. He wants to do that by 2020, well at Wembley we've done it immediately.

And the interesting thing about that is it's because it's little and often. We actually have three receptacles: one which is for putrescible or organic [waste], one which is for mixed recyclables and the other is for what you'd call garbage or trash, which eventually goes to landfill or some other means of disposal.

And people coming out of their apartments, coming down the lift, have three small bags and they do it on a daily basis. And that helps. That ingrains the recycling message, so there's a massive advantage: we expect to get above 50 percent, probably to 60 percent. High levels of resident satisfaction. They have no idea where it goes to once it's put in the receptacle, but they think it's great.

So do we have a marketing edge? There's no evidence; jury's out on green technologies in U.K. residential prices. We can't yet discern, because we've got insufficient numbers, whether there is a premium to living in a green dwelling.

So how did we make the decision? There are two approaches to decision making in my life in public policy and as a private developer. There's rational and analytical: I'm giving you Envac, it's an engineering system, you've got engineers, and if anyone's rational and analytical engineers are. Or you've got time-pressured and intuitive.

So we did an appraisal with the engineers and the accountants. So the accountant's cost for Envac was 8.24 million [pounds]. The alternative use savings from not having all these storage rooms is about 3.43 [million
The annual janitorial savings were about a quarter of a million pounds, but we've had a negative net present value of about a million. And so how did we deal with that? So did we comply by the outcome? I was determined to have this, and I said to the analyst, “What happens if you change the discount rate?” He said, “What do you mean?” I said, “Change it so it comes back to zero.” And he said, “Oh, I’ll knock it down from nine percent to eight percent.” Okay, and that’s a zero.

So we changed. Beware of discount rates, any of you who are doing the evaluation of these schemes, discount rates—future value of money. Now, we did that appraisal probably in 2005. We couldn’t have predicted that in the U.K. now have got rising inflation and we’ve got the lowest interest rates at half a percent that we’ve ever had in history. So 25-, 15-year discount rates are complete, utter rubbish. You’ve gotta do something, but if it doesn’t give you the answer you want, change it. So… (LAUGHTER)

There’s hubris. My boss is a great—was, he was my boss. He’s a great man for publicity. And essentially we learned on the grapevine that another scheme was going to announce, and it was going to be using Envac as a U.K. first. And my boss on the spot said, “We will do it.” So we wanted to be first to announce it.

So one of the things we spotted was that the appraisal didn’t reflect the positive externalities. That in effect, by us paying for the system, we relieved the usual, the normal costs of collection from the local authorities. We gave them tax savings because we increased the amount of recycling, and in the U.K. and Europe we have a tax on every ton going to a landfill. So the local authority got those benefits. They weren’t reflected in my appraisal.

There was a traffic reduction, which meant that there are positive externalities in terms of frustrations, quality and value of life generally, didn’t appear in [the appraisal]. So we value in the U.K. human life at three million pounds, and we reckon that 20 years of driving around with normal systems we’d receive one death, so that’s three million pounds that needed to go back.

They are externalities which need to be taken into account, and if you’re a private developer, unless somehow you can get a hold of that cash, you can’t put it into your appraisal. So we actually had to negotiate it back into the appraisal.

So what are the prospects in the U.K.? We’ve got a decision by local authority which owns a lot of land in a quaint place called the Elephant and Castle [London borough of Southwark]. They have taken up a principal decision as landowner to install the system. We’ve now got a planning requirement at a large scheme in Cricklewood [Barnet Borough of London], 8,500 new homes, and that says the developer has to install, it doesn’t say Envac’s, but an automated vacuum waste system.

Envac won its first sustainability award in April, the Property Week Award, but we heard only 48 hours ago they won a property waste Oscar [Award for Excellence in Recycling and Waste Management organized by letsrecycle.org], don’t know what exactly that is. So that is two awards in
the bag—massive publicity.

The problem in the U.K. is that there are fragmented infrastructure responsibilities, and I would echo the comments made by the opening speaker that we build them and then hope that we’re going to manage to put a Heath Robinson structure around it to get by. We’ve actually gotta think about putting these systems in up front.

In the U.K., and I suspect elsewhere, they’ve taken the same sort of privatization approach that Margaret Thatcher led us down from 1979 onwards. Landowners, developers and contractors are primarily responsible for infrastructure issues.

In the old days, and it’s evidenced at Roosevelt Island, the state or the local authority put the system in and developers simply...So the upfront capital expenditure was the local authorities. Now it’s the developers or the landowner. That means that with global recession we’ve seen what were 15—my appraisal of Envac was a 15-year build out period—it’ll be at least 22, 23 years. So immediately that payback period was knocked into a cocked hat, despite the fact that I’d already changed the discount rate.

So those are the major issues as far as we can see. Essentially now is not a good time, with the governments having bailed out the banks and the public expenditure of risk, to start trying to put up large-scale infrastructure projects, because we’re saying to government if you’re realizing the lot of these savings in reduced landfill tax and reduced collection costs, that you should make some contributions to the capital costs of these. But when we compare the way we’re going in the U.K., the communitization of these facilities: district [heating] schemes, gray water treatment plants, anaerobic digesters, if you’re going to go that route, then adding Envac adds a small additional cost because actually it’s peanuts compared to those other big ticket items, is sensible in my view.

Conclusion? I would say, good old English saying, “Put it in your pipe and smoke it.” Why on Earth does every service that we have go underground, go in a pipe? Whether it be water incoming, sewage, power, gas, district heating, the only thing we surface collect and dispose of is waste. Why are we doing that? So there’s a great song called “Going Underground” by The Jam in 1980, and I think Envac ought to adopt that as it’s anthem.

So, the future: we see co-location of these sorts of services, collaboration and symbiosis in infrastructure are absolutely critical. Why can’t you collect your organic waste and then ship it back to the transfer station because it’s located 10 yards away from the anaerobic digester? There’s no transportation of that, and you could do similar things.

So I think that’s where there’s going to be big growth area. It’s a major environmental benefit, not just the waste collection system. We think that the recycling benefits are—they’ve astounded us, and they’ve astounded the people in London.

So I would recommend it to you. I was hoping to put a couple of pictures on here of what I’m actually talking about, I know that some of you may not have seen it, but it is a fantastic system. And I’m not saying that
because I—if someone had to say what should they put on your epitaph? It wouldn’t be “He built 20,000 homes,” it would be, “He introduced Envac.” Thank you. (APPLAUSE)

CARLOS VÁZQUEZ: Welcome. Excuse me for my English. My English is very bad, so I decided not to speak English. I decide to speak in Spanish but a little bit of English, (LAUGHTER) a little more of Spanish, a lot of hand motion. Because (LAUGHTER) I understand.

Look, in Barcelona lives a wise man. This wise man used to say: “too much data, too much figures, may block your knowledge.” So I don’t leave you any data. I want you to increase your knowledge. So you want data after, I’ll give you some data.

My name is carlos Vázquez. I come from Barcelona. I am the head of the waste management system of the city. I am here because in Barcelona we begged for the pneumatic system a long time ago, for the Olympic games in 1992. It was a time when there was a lot of money in the city. We wanted to show the world what we’re able to do with money, and with technology also. So we retrofitted the city, we opened the city to the sea, and we built a new district called the Olympic Village where we installed the first central station [pneumatic collection] in the city. It was the first central [collection] station in Barcelona.

But we have grown. We have grown. We are not alone also. We have grown as the technology companies grow. Right now we have seven centrals just working, two more are under construction, and two more [in] planning. But no more data. (LAUGHTER) To grow together means to learn together with the technological companies. When I say sometimes that we have grown together, I mean that we have learned together. Someone from Envac said that Barcelona made the questions and put the problems and the company provided the answers and solved the problems. To grow together means to learn together.

But what have we learned through the years? Is the pneumatic a good system? How [do] pneumatics allow sorting? Why a master plan? And the money. What about the money? And the environmental balance? Let’s talk about it. Our knowledge. First, the pneumatic system, for us, is a good system for collecting waste in Barcelona. There is no doubt about it. But it’s not the best way for everybody in Barcelona, for collecting. There are some places in the city where another system is working. It is easy to put another system, traditional system, with containers on the street or wheeled containers or whatever, for example this is the Eixample [district] of Barcelona with straight streets. It’s easy to collect waste here. But in downtown like old town, it’s for us the best place to put the pneumatic system with all narrow streets where it is difficult to put the traditional container. So it is a good solution, but not for everywhere.

For us it’s a good solution in new urban developments, as we already said, as Mike said. This is the map of Barcelona and some of the new developments with pneumatic systems. These are some pictures of the [pneumatic waste] inlets of Barcelona [points to photographs]. A great inlet.
This is a new area. But also inside the building, and the pipe through the parking of the new buildings.

But also it’s a good solution in [the] old town where it’s very difficult to install traditionally built compactors. We’ll talk it about that after. These are some parts of the city, the old city, with the pneumatic system. The pneumatic system allows the sorting of waste collection. In Barcelona through the pneumatic [system] we have two fractions: non-recyclable [waste] and the organic, or biowaste or kitchen waste.

The green one is the non-recyclable [waste] and the orange or brown one is the organic waste. And the other fractions are collected in the street containers: plastic and packaging in these yellow containers, glass in this green container, and paper in this blue container.

But we have learned also that it is important to think. In our whole life it is important to think, but in pneumatics also it is important to think, to plan. It’s impossible to build the central [collection facility] without knowing the capacity of the pipeway, the network, without overall figures. It’s important to think. To think since the beginning, not when we have the central or the pipe already put in the street. We have to think from the beginning.

We wrote a Barcelona pneumatic master plan. We wrote a master plan and we decided in which zones of the city it is worth it to install the pneumatic [system]. The technological priorities, our economical budgets, and all the details of each future [central collection] station, even the place [location]—what will be a future station.

These are examples of our master plan. And these are the different stages of our master plan: our first consolidated stage; our second stage to put the pneumatic system in the old town; and just to think, just to think, not to do it, extending the pneumatic to the whole city. We’re never going to do it. But just to think.

And this is—too much data. (LAUGHTER) What are our priorities right now? First, optimize our centrals [collection stations], just increasing the [number of] inlets working. Look, our average rate working capacity is only 35 percent of the whole capacity of the system, so we need, we need to increase this working ratio. We need it. We need a better rate. We need to put more inlets on the street to make the system more efficient. We will only build new terminals [central collection facilities] if first we optimize the prior terminals. We must increase the environmental efficiency of the system. We know that it’s a good system from the point of view of the environmental view of our local scale, but the system must improve in a global scale view. Also, buildings have to keep doing educational programs to show the users how the system works. [Points to slide] These are some educational programs of the pneumatic system in Barcelona. And this is not from Barcelona. [Points to photo of Center for Urban Pedagogy (CUP) poster] This is from the exhibit of Roosevelt Island in New York. We went this morning and I think it is a good example of how children look at the pneumatic system. Excuse me for the picture; it’s done with my mobile phone, so it’s not very good.
But what is the main advantage of the pneumatic system for Barcelona? Our urbanism profit, because pneumatics arranges and releases public space. It is for us the best advantage; the public spaces are free. No more containers on the street.

We know through some examples of pneumatic systems in Barcelona [points to slide]: look, a gothic cathedral with a pneumatic system in front of Santa Maria Del Mar; look, a public garden with a pneumatic system; look, traditional containers [on the street]; look how it occupies the [public] space. Pneumatic [systems] liberate public space.

We know other advantages: noise reduction, decreasing heavy traffic, operational advantages, etc. [points at slide] These are maps of noise. Pneumatics noise, traditional collection containers noise. Even in the front of the houses, pneumatic and traditional systems [diagram of intensity projected on building facades]. In Barcelona we collect waste overnight, so noise is a very tight problem for us.

The pneumatic systems are not the cheapest solution for waste collection, from our experience. We don't forget that. There are some systems [that are] cheaper, but there are other systems [that are] more expensive. But we can still pay for pneumatics in some cases, even [with] the price.

We have learned to take advantage of the systems to adapt them to different areas of the city. Look, this is Santa Catarina food market [in Barcelona's Gothic Quarter]. In the second basement we put a central [collection facility]. This is the central [collection] station in the second basement, to take advantage of our installations.

We put a central in an old traffic tunnel. Look, the old traffic tunnel there is no longer used, and then we built our central station inside. And on the top there's a garden [Plaza Lesseps] with the chimneys for the pneumatic system, like a smokestack. And [inside] the pneumatic [equipment].

Also, some inlet doors to reduce public space occupancy. To free up occupancy is very important. And the Barcelona inlet with a double door for both residents, the small one, and shop waste with a key—use a key to open that square. The square door.

So again, we know that the system allows a specific solution for specific problems. But we have some ways to go. We have to think, and we will find the best solution. Maybe it's the pneumatic, maybe it's not the pneumatic. So, if you don't know where you go, you will arrive to another place. (LAUGHTER) Thank you. (APPLAUSE)

LOVISA WASSBÄCK: My name is Lovisa Wassbäck and I come from Stockholm in Sweden. And in Stockholm I'm responsible for the planning and development of waste management. Like Carlos, I have been visiting the exhibition today on Roosevelt Island, and I really recommend you to visit it, if you haven't been there, it was very interesting, very nice to see.

Stockholm, I had a map, a small map with only Stockholm, but it disappeared, but here is Sweden, here is Stockholm. The region is
about two million inhabitants, and in the City of Stockholm we have about 820,000 inhabitants and we expect the amount to increase to about one million within 20 years.

The issue is how to handle our waste by that time. Today the municipality is responsible for the waste from the households, both the ordinary waste and the bath waste and the hazardous waste. And they’re also responsible for the so-called “household-like waste” from commercials. But not industrial waste, only the waste that comes from people in the locales and so on. We don’t employ any personnel for that. We have private contractors, the city is divided in different sections, and they have long-term contracts to collect the waste.

And in Sweden we also have the producer’s responsibility for packaging materials and newsprints, and it has to be separated in different fractions: glass, paper, metals, and plastic. So we don’t have any MRF facility [materials recovery facility] like you have here so we can’t put it together, unfortunately. Maybe we will have [a MRF] in a couple of years. And also for electrical and electronic equipment we have producer’s responsibility, and medicines, vehicles, tires.

And here are some photos from the beginning of the 20th century. It has changed a lot, of course. This photo down to the right, that is our first incineration plant in Stockholm, from beginning of the 20th century—the one we have today is much more modern.

And today it looks like this. We both have manual systems and mechanical systems. We have for example, containers down in the ground that we pick up and of course pneumatic systems. And we have quite a high grade of recycling and all the waste that is not recyclable goes to energy recovery, to district heating and electricity. And some of the biowaste [organic waste] goes to biogas production, and all our waste trucks drive on biogas.

And the working environment has been improved a lot since—we have about 90 stationary systems for underground waste transport, or Envac systems. So all this is an assist. But we still have problems, too, with the environment for the workers. And in some of the older parts of Stockholm we have very bad conditions and difficulties to get it better because you can’t—there are very old houses and you can’t in an easy way make better garbage rooms, or take away the stairs, and it quite often looks like this [points to photo] and you have some very narrow passages for the collectors and a lot of steps.

That’s not good and we know that quite soon they won’t be allowed to collect the garbage from here any longer, and we have to find a solution. I think it would be very appropriate with vacuum systems here. For now, all the [pneumatic] systems that we already have in Stockholm are owned by the property owners, not the municipality, but we think that if we want to have these systems in the existing areas we have to have the ownership in a municipality.

We made a proposal from the Traffic Administration and City Development Administration that all new stationary vacuum systems shall
be owned by the municipality. This proposal has been approved in our committees and now it has to be approved by the City Council. I hope that it will work out. And we have seen that we have to do some investigations about the economy and [legal aspects].

If you're interested in it, it's translated into English, so if anyone wants to read it [download at fastrash.org/archival-materials]. We see a lot of advantages for municipal ownership: it [gives] stability and a long-term perspective; vacuum systems can be installed in each area where we see that it is the most suitable system; we are able to install them in areas with old buildings; we can see that we have better opportunities to synchronize with other operations, for example when you have to put other pipes in the streets, and we can coordinate it; even public waste bins can be connected on the streets; and we also get better opportunities to progress the development of the technology; and also as a municipality we have to work with the law for procurement, and we think that will open up the market for more actors, which there actually are, excuse me, Jonas [Tornblom], and some competition is always good I think.

There are a lot more advantages; I could not write them all down. We also have some challenges if we get municipal ownership: how to finance the high investment charges; also knowledge within the Administration has to be built up, both for procurement of the systems and for operation; we have to make clear where the interface between [the] municipality and [the] property owners is, both juridically and economically; and we also have to convince the property owners about the advantages of the system. We want to have them with us.

I would like to mention some examples where we are about to install systems now. We have a new area called Stockholm Royal Seaport—they have started to build it now and it will be finished within 20 years. I don’t know if anyone has heard of Hammarby Sjöstad in Sweden, it’s a very environmentally approved item. Royal Seaport will be even better, even sharper. There will be about 12,000 apartments and 35,000 work places, and we will have this vacuum system all over. The advantages are, of course, less traffic in the area, and it’s also easy for the residents—accessible. And we plan for three different factions, and we hope that in the future we can sort recyclables together and don’t have to separate glass, plastic, and metals.

And we want to have individual [monitoring] mandatory by the inlets, so every resident can see how much garbage they produce. And we plan to have food waste disposals in every kitchen. I think that’s quite [common] here in the U.S., but in Sweden it’s not especially. [Points to slide] An example of inlets, maybe from Wembley [London]; we will have the same colors on the inlets in the kitchen as on the garbage bins so it will be easy for the residents.

And another project is in one of the parks in Stockholm, Mariatorget it is called, where [we] will have a stationary vacuum system and connect all the litter bins and we will also dimension it to be able to connect [to] the surrounding properties in the future. There is quite a lot of garbage,
especially in the summer. Everyone is having a picnic in the park and the litter bins are too small and they can’t empty them all the time so I think this will be much better.

The important part, I think, in achieving a sustainable waste management is that we have to see waste planning as a part of the infrastructure, not separated from other infrastructure projects. This is as important as the electricity and the roads and streets and everything else. And it has to be planned early in the planning process. And also cooperation and coordination between administrations in the city so everyone is aware of the waste management and what the objectives are and how we want it to be, and also cooperation and coordination between the city and the commercial world.

Since Stockholm is the European Union Green Capital this year, the first ever, we will have a workshop in the end of November concerning sustainable waste management and sustainable infrastructure, and of course, you are very welcome to visit us. And you’ll find more information about that on Stockholm City’s website. Thank you. (APPLAUSE)

MARTIN MAILLET: Good evening. I’m Canadian, but I speak French most of the time, so excuse my accent. It’s a great pleasure to be here to present to you tonight the City of Montreal’s plan for the Quartier des Spectacles project, Montreal International entertainment district. This presentation will also address the issue of waste collection management in that sector affecting hundreds of thousands of people during the peak period, and our vacuum system has the potential to improve the City’s project.

The Quartier des Spectacles project is quite a big sector and very vast territory of 10.3 million square feet located in the eastern part of downtown Montreal. This sector has been known for over 100 years for its nightlife, its clubs, its cabaret, its theater, but even for its red light. (LAUGHTER) Even before the city decided to invest in its public domain, the Quartier des Spectacles included more than 30 theaters and venues, 80 places of cultural diversion, 28,000 seats, five million festival-goers each year, plus 450 cultural companies, 7,000 culture-related jobs and more than 47,000 students. So it’s a quite big sector.

Within that big territory the city decided to intervene in the zone with the most important cultural activities, which we call the Place des Arts sector, named after the most important cultural complex in the province of Quebec. The City of Montreal is investing more than $150 million in this 3.3 [million] square foot territory for the next five years.

The main characteristic of the area is a large concentration of cultural events and activities such as theaters, concert halls, the Montreal Jazz Festival, the FrancoFolies festival, the Just For Laughs festival, the quite large number of vacant lots used by festival, and a very deteriorated infrastructure. One of our main concerns is the discrepancy between the millions of festivalgoers that visit the area during the summer, and the very few visitors the rest of the year.

Therefore, the main goal of the project is to create a true destination
with that part of downtown Montreal. As you can see in this illustration with the Place des Arts complex in the middle, the initial situation was quite unconstructed and not very green. The project is to turn this kind of no man’s land into a pre- and post-theater destination with lots of plantings, reorganization of the street geometry, viewer-organized public places around the Place des Arts complex.

The urban concept of the project is what our designers call, and I want to say Daoust Lestage because it’s important to name our designers, what our designers call the “Festival Pathway,” which aims to link new public spaces together in order to adapt to the needs of big festivals as well as small events with the integration of huge amounts of multimedia infrastructure, and to facilitate and diminish their set up and tear down period.

For example, last year there were about three months during which Sainte Catherine Street was closed, and during those three months one month and a half was only for set up and tear down. So we want to diminish it [set up time] by including many infrastructures to help them. One particularity of this project is that the entire budget of $150 million for the four phases is totally confirmed. Good news for us.

Also we are realizing this project in fast track—it’s not necessarily very good news for us. Anyway, construction started in 2008 and we plan to deliver one phase each year. So we already delivered the first phase, Place des Festivals, in 2009 as planned. And in a few weeks, we will deliver the second phase of the project. So, rapidly, the four phases: the first phase of the project was very exciting and critical because we had to make the final show mounting, the design, and the preconstruction phase at the same time.

The main characteristic of that phase was to use an open-air parking and level down to the ground to create an on-street perspective for the new public space. It was during that stage that we considered integrating the Envac system for the project. So at the beginning, we didn’t have this project in mind but because we have plenty of time to think about it, we decided to do it.

The heart of that place consists of 250 fully automated fountain jets that animate the space and are open to the creativity of artists who can create water, light, and music shows. Since the opening the fountains have rapidly become a Montreal hit with workers and visitors alike.

Talking about fast track, this is a good example of what we mean. We delivered the Place des Festivals on June 14 and only two weeks later on June 30th, the Montreal International Jazz Festival celebrated its 30th anniversary with a free concert of Stevie Wonder. This show that brought together more than 250,000 spectators was the biggest outdoor show ever held in downtown Montreal. A theater was definitely not an option.

Phase two of the project was divided in two parts: the first part, called La Parterre, will be a natural amphitheatre and will be ready in a month for the opening of the FrancoFollies Festival with another mega-show featuring the Montreal Symphony Orchestra.
Here are some views of that new place with, in the background, the new house of the symphony orchestra, presently in construction. The second part of that phase will be the Promenade des Artistes. This intervention will modify the highway feel of the area by the addition of a central square. Presently in construction, this place will be accessible in September.

Sainte Catherine Street [Phase 3] is a major road for Montrealers in the downtown area, and this road will be increased by creating a pedestrian zone during the summer months. With these interventions, this section of the street will not only be reserved for pedestrians during major festivals, but throughout the summer months.

Started last March, this important construction site will totally transform how Montrealers use and see Sainte Catherine Street. The vacuum system will be very present in this important phase of the project. Finally, the fourth phase of the project called Esplanade Clark will possibly integrate an underground parking and an outdoor ice rink—I tried to meet the people from the recreation center but they didn’t call me back. (LAUGHTER) The details of this last phase are yet to be confirmed—because we are in fast track—as we are still working on the design, but the construction will begin in 2011.

So why integrate vacuum waste collection system in our project, in a cultural project? I think many of my colleagues talked about the planning and how it’s important not to just give this kind of project only to only waste departments. I think [this is] a very good example of where the politicians, the big projects, integrate this kind of infrastructure.

First of all, it was very important for the city to innovate and be original in our intervention and it is why they gave us a yes to do it with this project. Secondly, given the scope of the project, we had the opportunity to open practically every street, because we updated all the infrastructure—sewers, aqueducts—and all public equipment. So integrating a vacuum system was easier as well as being more time and cost efficient. Thirdly, the cleanliness of the sector was a very major issue for us because the project aimed to create a world-class destination. And because we already have [the] international spotlight on the city during events such as the International Jazz Festival, Just For Laughs Festival, the area has to remain impeccable.

It’s very difficult for a city to plan garbage collection if you add recycling and composting, as we will be, and have peaks of hundreds of thousands of festivalgoers on certain days; you cannot count on the traditional system for collection. So the City looked around the globe to study different kinds of systems that are not too intrusive, performing even during winter, and adaptable based on utilization. And our analysis identified the Envac system as the best one for us.

This $8.2 million project was integrated into the $150 million project. And since June 2008, as we open a street we install tubes, chambers, and connections for the system, even if we don’t know where we [will] put the central [collection facility], but that’s another story. (LAUGHTER)
The waste collection system consists of ten groups of three inlets, so thirty inlets in total in the public domain. Three fractions: compost, recyclables—we don’t have to separate, and we are very happy with that—and garbage. And 1.2 kilometers or nearly 1 mile of pipes. The capacity of the system will be 5,000 tons per year. And at the delivery of the system, we will be at 25 percent of the capacity at the beginning. And finally, the inlets will be custom designed in accordance with the Quartier des Spectacles design and [street] furniture, as Barcelona has done, we will create inlets just for us.

The work on Sainte Catherine Street accelerated the installation of the system because of the number of collection points that would be integrated to the system. As we build, we continue to aim to coordinate the opening of the system with the opening of the Quartier des Spectacles in 2012. But we have lots of work ahead of us, as the central [collection facility] needs to be integrated into a new building in the next year or two.

So as you can see, this project is quite intense. We also have the pressure to continue the present festival, even during our work, which, as you can imagine, can complicate a little bit our work. We invest a lot in design, architecture, engineering, and multimedia, and for us the vacuum system is an important part of the quality of the project. As a final project, but also as a premier, the City can introduce composting in the public domain, manage huge quantities of waste without traffic, pollution, and noise, and without being in conflict with pedestrian zones and festivals.

Thank you. (APPLAUSE)

KEN GREENBERG: Good afternoon. Everyone’s being really patient, it’s kind of hot in here. I’ll try and do this fairly rapidly, but I’m going to try and talk about two things. At Juliette’s request I’m going to speak to what this means to me as a practitioner, as an architect, as a designer. I’m not an engineer. I’m not an expert in the system. I unfortunately don’t yet represent a city that has a system even as a project or underway, although we have high hopes that that will actually be the case at some point in the near future.

I’m going to start with the experience—like Mike, I had the opportunity to visit Hammarby Sjöstad last August and was enormously impressed with what I saw there, and at that point really became acquainted with the potential, the enormous potential for urban design of these vacuum systems.

This, just to pick up on some of the things that Lovisa was discussing, is a whole series of projects that Stockholm has initiated, which is really part of an intensification strategy [points to map on slide]. And Hammarby Sjöstad is the lower right, the Royal [Seaport] is on the upper right. I actually had the opportunity to visit both the royal harbor site and Hammarby Sjöstad, and these projects are really exemplary in many ways, not just waste management, of what cities in the 21st century are becoming and have the potential to become.

This is the site as it was. It was originally supposed to be an Olympic
village, and like many failed bidders around the world, Stockholm decided to proceed with the project nonetheless, not being awarded the Olympics. This “before” shot [points to aerial photo slide] was basically described as industrial squatters on this piece of land. And all this—you can’t possibly read this diagram—but what it shows is under the rubric of what was called “SimbioCity” for Hammarby: a whole array of different techniques to try and improve the environmental footprint of this new neighborhood, this new community in Stockholm.

And a lot of it had to do with recuperating energy in every conceivable form. And waste management played a key role, not in isolation, that point was already made, but as part of a larger set of strategies. So this is what was done in a remarkably short period of time—I think I’ve got the numbers right: there are approximately 25,000 residents, about 10,000 employees. I think we the time period in which this was created was roughly from ’97 to the present.

There are some quite amazing features. If you look on the upper right [points to aerial photo in slide], you’ll see the ski hill that was actually made by enhancing the existing topography, taking some of the materials that were taken off the site as part of the decontamination strategy. There’s a marvelous oak grove, which is that oval in the middle of the image, which was preserved.

It really just exhibits an incredible quality of life. It’s all built around a tramway system so the modal split is fantastic. But just to give you some images, for those of you who haven’t been fortunate enough to see this, of what life is like in this remarkable community. And a big part of it actually has to do with what you don’t see. And that is the point that was made by Carlos about liberating public space, about actually not having large garbage trucks trundling around this community, not having garbage rooms in the buildings, not having a necessity for a lot of those things which take up space and make it impossible for the kind of intimate settings that you see here.

You see the ski hill in action. Of course this is a winter city and you can’t only look at it in the summertime, but it really is a kind of a resort in the city for people who are fortunate enough to live there. So the system has already been described. These portals [waste collection inlets] are ubiquitous throughout the project.

We visited both these installations in the courtyards of many of the buildings, extremely convenient to all the residents, but also the central [collection facility], which was a tiny little building. It’s about 200-square meters or 2,000 square feet. It is absolutely odorless because the garbage is never exposed to the air. It goes into all the different streams that it goes to—it’s really quite amazing to see how this works.

This is again in the courtyard of one of the residential buildings. What is also very interesting about Hammarby is we were told when people originally chose to live there, for the vast majority of them, it really had very little to do with the ambitious environmental program that Hammarby had
staked out, but rather it was a very agreeable place to live at a good price and a good location, very convenient to transit and so on.

But once people got there and they saw what was happening, especially the kids who were involved in a whole educational program through the schools, what was originally the marketing center for Hammarby has turned into an environmental center and there are all kinds of programs where people are tracking their own carbon footprints, where the neighborhoods are involved in a very organized way as well as an informal way in this very collaborative project that they are all part of.

So I’m going to switch gears now to a project that I’ve been involved in, in my own city in Toronto, where we’re we would very much like to have this vacuum system, the Envac system. And where, for reasons I might get into later, we have been so far unsuccessful.

Our current political administration has gone thumbs-down, and we’re very pleased for our sister city Montreal, glad to see that they actually, in the Quartier des Spectacles, have been successful. We’re a bit jealous, frankly, because Toronto, I think, was the first place that was approached to be the springboard into North America and now we’ll have to be second. We hope to learn from your experiences.

But this is a very strategic site, which has a lot of similarities with Hammarby Sjöstad. It’s at the mouth of a river which comes in from Toronto harbor into Lake Ontario. It is a combination of a flood-proofing and naturalization of the river, the introduction of new municipal infrastructure, new light rail transportation. A development program that is almost identical to Hammarby: 25,000 residents, 10,000 employees just by a sheer coincidence, about 190 hectares, or 325 acres. And I was on a team with Michael van Valkenburgh [landscape architect], who is a close friend and collaborator. We also worked together on Brooklyn Bridge Park, which I hope many of you have had a chance to see, that opened recently on the other side of the river. But we put together a team and we actually won this competition in 2007.

This was the competition entry. And it had to deal with the whole array of issues that I’ve mentioned. It has since been selected by the Clinton Foundation as one of 17 projects in ten countries, which will, as part of the climate change initiative, really show how new development can actually get close to carbon neutrality. And it’s interesting that the Stockholm Royal Seaport is actually another one of those projects.

There are four in North America: two in Canada, two in the U.S. Treasure Island in San Francisco is another, Dockside Green in Victoria [British Columbia] and Destiny in [central] Florida being the other North American examples. So to achieve that, what it really means is you have to deal with all of the issues of urban development simultaneously and in a completely integrated way. Among others: public realm, circulation, built form, microclimate, the programming of neighborhoods, a sustainable mix, but in our case, flood protection and naturalization.

And sustainability is really a pretty broad umbrella organizing principle that ties all of those together. And by doing that whole array of
things, it is theoretically possible, and in our case we intend, practically possible to actually achieve net plus.

It's not just by doing LEED Gold buildings or even LEED Platinum buildings alone that one can get there—the municipal infrastructure, all of the elements including energy, including waste management, all of these things actually have to be included as part of an integrated set of strategies.

So just to give you a three-dimensional visual of this, we're actually moving the river as part of the flood protection strategy. We're creating 100 acres of new, naturalized parkland with a combination of perched wetlands and river-fed and lake-fed wetlands. It is entirely integrated into existing neighborhoods on all sides.

It is intended to have a full array of all the facilities that would be required for aging in place for complete communities: daycare, libraries, schools, community centers, recreation, all the things which exist, by the way, in Hammarby. Hammarby is a perfect example of a community that's actually been able to achieve this.

And we've tried to position this from a programmatic standpoint with a human ecology that is as rich as the natural ecology will be. This is a three-dimensional view. It's actually, in terms of the building typologies, because it's right in the heart of downtown, parts of it are a little denser than Hammarby. It's a combination of some small footprint, high-rise towers, midrise buildings and some more family-oriented structures in parts of the neighborhood.

These are some images. And what these really show is the shift to mobility that will put pedestrians, cyclists and transit first. Automobiles are obviously still present, but occupy a much less significant position in the hierarchy.

The most important aspect of this, as in all such developments, is what happens at the street level: an animated ground plane; and around the transit stops on the light rail will be all the retail, giving people the opportunity to do as many things as possible as part of their daily life activities within easy walking reach of where they live; there will also be a mandatory mix of employment and residential as well as a full array of other facilities. The public realm: as in the case of the Quartier des Spectacles, very similar strategies to really develop a very rich and integrated public realm where we would love to see the portals of a vacuum system included.

And all of this, by the way, all the approvals for all of this is going through our city council starting in June. And so we'll be at a stage where it's not too late, fortunately, to accomplish integration.

So I thought I would end this by—for those of us who are sentimental about what we have now—(LAUGHTER) a kind of in memoriam to all the things we're going to miss if we are successful in making this shift.

So you can imagine some soft violin music playing now (LAUGHTER) as we go through this. But these are the things, from the standpoint of somebody like myself, an architect-urban designer, all of the things that we do not have to accommodate any longer, which make a tremendous
difference. So pest control, or vermin control as Mike phrased it, is obviously a very significant factor. The proliferation of these bins is just unbelievable. In our city now where every household is obliged to have three kinds of bins and where the unions insist that these be things that they don’t have to lift anymore, that the trucks can actually lift, they’re enormous. Especially when we get into downtown neighborhoods with small lots and small frontages, they literally can occupy the entire front garden of a house. It’s quite horrendous.

It has enormous impacts on street design. The size of the garbage trucks, what the engineers insist on in terms of turning radii, the fact that when you have municipal garbage pickup, the trucks do not back up. It’s in the union contract. So it can only be forward motion. It just takes up an enormous amount of space. And I’m deliberately showing a winter condition here as well as a summer condition, which in our case, being a winter city makes this even more difficult.

For architects this is a nightmare. These trucks that have to lift—the vertical clearance that’s required to lift the bins up inside garbage areas and buildings is immense. The space that these garbage rooms take up, it takes up an enormous chunk of the ground floor of buildings.

In fact, I would venture to say that the kind of buildings that I saw in Hammarby and in other places, these small, pavilion-like buildings which do not have such garbage rooms, would literally be physically impossible to do, given the spatial requirements of this pickup.

I want to mention one other issue. We in Toronto, and I don’t think we’re alone in this, periodically, we have strikes. (LAUGHTER) And when we have these strikes, we have a tremendous public health problem. The collection of this garbage, and in this case [points to photograph in slide] it’s filling up hockey rinks our city; it fills up parks; it gathers tremendous numbers of rats and other pests, insects, and so on. The public health department is always issuing daily bulletins in terms of the impacts of this. These strikes are usually timed to inflict maximum pain during the hot days of summer trying as much as possible to conflict with festivals or other activities that people want to undertake. So this is a serious problem. So the ability not to have this is quite incredible.

And finally, landfills: where does all this stuff go? And I realize that the vacuum system isn’t the tail that wags the dog of whether you have a waste to energy system. This is a big debate in North America. North America has been much more reluctant than Europe to embrace these kinds of technologies. It’s a very controversial subject. But if you do go that way, the vacuum system obviously makes it far easier to do that. So I’m ending with this image [aerial photo montage of the Lower Don Lands]. And ever optimistic, we have a municipal election coming up October 25th (LAUGHTER). We are quite hopeful that we will get a more progressive administration and it won’t be too late to consider this opportunity. Thank you. (APPLAUSE)