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COMMITTEE ON TECHNOLOGY

CITY COUNCIL
CITY OF NEW YORK

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TRANSCRIPT OF THE MINUTES

Of the

COMMITTEE ON TECHNOLOGY

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December 15, 2020
Start: 1:00 p.m.
Recess: 2:34 p.m.

HELD AT: REMOTE HEARING (VIRTUAL ROOM 1)

B E F O R E: Robert F. Holden,
Chairperson

COUNCIL MEMBERS:
Costa G. Constantinides
Brad S. Lander
Eric A. Ulrich
Paul A. Vallone
Kalman Yeger

A P P E A R A N C E S

Jessica Tisch
Commissioner of the New York City Department of
Information Technology and Telecommunications

Yosef Lehrman
DoITT's Deputy Commissioner for Information
Security and Chief Information Security Officer

Steven Bezman
DoITT's Deputy Commissioner for Applications

Amy Waggoner
Senior Director of State and Local Government
Affairs for the Eastern half of the U.S. for
Sales Force

Tristan Morel L'Horset
Senior Managing Director with Accenture

Ryan Naples
Deputy Director at Tech:NYC

Matthew Cornelius
Executive Director of the Alliance for Digital
Innovation

Steven M. Bellovin
Professor of Computer Science at Columbia
University

Omid Ghaffari-Tabrizi
Internet Association's Director of Cloud Policy

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2 SERGEANT DAUTAJ: Recording to the PC is good.

3 SERGEANT BIONDO: Thank you.

4 SERGEANT SADOWSKY: Cloud recording all set.

5 SERGEANT BIONDO: Thank you.

6 SERGEANT PEREZ: Back up is rolling.

7 SERGEANT BIONDO: Thank you. Sergeant Sadowsky
8 with your opening statement please.

9 SERGEANT SADOWSKY: Yes. Good afternoon and
10 welcome to today's Remote New York City Council
11 Hearing of the Committee on Technology.

12 At this time, would all Council Members and
13 Council Staff please turn on their video. To
14 minimize disruption, please place electronic devices
15 on vibrate or silent mode.

16 If you wish to submit testimony, you may do so at
17 testimony@council.nyc.gov. Once again, that is
18 testimony@council.nyc.gov.

19 Thank you Chair Holden, we are ready to begin.

20 CHAIRPERSON HOLDEN: Thank you [GAVEL]. Good
21 afternoon, I am Council Member Holden, Chair of the
22 Committee on Technology. I want to welcome you all
23 to our hearing on the day before the snow storm.
24 Hopefully a small storm.
25

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2 Today, we will focus on the Advantages and
3 Disadvantages of Cloud-computing Systems and how the
4 City can best utilize and interact with this
5 technology. The Committee will also hear
6 preconsidered Intro., that's not numbered yet, in
7 relation to the assessment of the feasibility of
8 storing city agencies electronic data on cloud
9 computing systems.

10 The Committee expects to receive testimony from
11 the Department of Informational Technology or
12 Information Technology and Telecommunications group,
13 advocacy groups, industry experts and other
14 interested members of the public. The reoccurring
15 theme that is becoming more evident is how society
16 and its interactions are moving of course on line.

17 This transition has been happening for a while
18 but due to the COVID-19 pandemic, it has kicked into
19 high gear. Cloud computing is one of these
20 transitional elements. According to the National
21 Institute of Standards and Technology, cloud
22 computing is a model for providing on demand network
23 access to a shared pool of computing resources. In
24 other words, it is the delivery of computing services
25

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2 like software, analytics, databases and more over the
3 internet.

4 With working from home now, the norm cloud
5 computing is seeing an increase adoption to provide a
6 more streamlined and efficient online experience for
7 companies and governments alike. But even before the
8 pandemic social distancing norms, the cloud computing
9 model saw an increased adoption due to the increased
10 ID agility and higher operating speeds than
11 conventional data centers and digital operations.

12 For example, while conventional onsite data
13 centers would require up keep costs like supplying
14 power, maintaining physical space and spending time
15 managing that data center, the cloud computing model
16 foregoes those costs by having a separate entity
17 provide the IT resources online. Although there are
18 many benefits, there are also issues that must be
19 acknowledged. For one, cloud computing models cannot
20 just simply replace preexisting legacy systems and
21 absorb data.

22 Migrating data to the cloud is an expensive and
23 arduous undertaking necessary for the system to
24 function. Additionally, beyond operation concerns,
25 like how a cloud computing provider will manage the

1
2 data, there are also security concerns. On the most
3 basic level, migrating data to the cloud provider
4 system means relinquishing some control over that
5 data. There are also general risks that stem from
6 our new digital age like packing concerns and data
7 breaches.

8 While cloud computing models promise substantial
9 advantages, there must also be weighed in conjunction
10 with their risk to the City and its residents. So,
11 we have to weigh it. I hope that today's discussion
12 will clarify both pro's and con's of cloud computing
13 systems and take a closer look at how New York City
14 can be a leader in technology. We wish to work
15 together with the Administration on this critical
16 issue and look forward to hearing the valuable
17 testimonies from the Administration experts and
18 advocates.

19 The following bill will also be considered today,
20 preconsidered Intro. sponsored by Council Member Paul
21 Vallone in relation to the assessment and of the
22 feasibility of storing city agencies electronic data
23 on cloud computing. I want to thank the Technology
24 Committee Staff, Counsel Irene Byhovsky, Policy
25 Analyst Charles Kim and Finance Analyst Florentine

1 Kabore for their hard work in preparing for this
2 hearing. I also want to thank my Chief of Staff
3 Danny Kurzyna and my Communications and Legislative
4 Director Kevin Ryan.
5

6 I see some of my colleagues, Councilman Yeger is
7 here. Councilman Vallone, Council Member Lander. I
8 think, did we get everybody? I think we did, right.
9 Okay, good.

10 I now invite my good friend and Queens colleague
11 Council Member Paul Vallone, the sponsor of the bill
12 we are hearing today to provide an opening statement.
13 Council Member Vallone.

14 COUNCIL MEMBER VALLONE: Thank you Chair Holden.

15 CHAIRPERSON HOLDEN: One second, one second, we
16 have Council Member Ulrich I see has just joined us.

17 COUNCIL MEMBER VALLONE: And Costa Constantinides
18 waving at us.

19 CHAIRPERSON HOLDEN: Oh okay, there we go. Thank
20 you.

21 COUNCIL MEMBER VALLONE: Alright, thank you Chair
22 Holden. Yes, you timed the hearing perfectly, right
23 before hopefully a small winter storm.

24 We are hearing today a preconsidered bill to help
25 New York and bring New York to city's technological

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2 infrastructure into the 21st Century and beyond. We
3 are looking into transitioning our data and our
4 applications to the cloud, which would be our first
5 step in creating a dynamic and a cutting edge
6 platform for a city to build on that is affordable
7 and secure and it is probably overdue.

8 We must have a strong technological foundation
9 that we can rely on at a moments notice to ensure
10 that we can continue our work through any emergency.
11 Cloud storage would also allow our city agencies to
12 store and share data more easily creating a more
13 transparent environment in our government. Having
14 access to this data and to the incredible powerful
15 tools most cloud computing companies offer, will
16 allow us to identify the problems more easily and
17 investigate solutions to a data driven approach.

18 I would like to thank Speaker Johnson and Chair
19 Holden for allowing us to hear the bill today and
20 create a comprehensive report on transitioning our
21 systems to the cloud, which will be heard today.

22 Once again, we must find ways to ensure the
23 integrity of our technological infrastructure and
24 ways to utilize all the data in our city's care to
25 create meaningful data driven policy changes.

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2 I look forward to today's hearing, our testimony.
3 I look forward to our fellow Council Members to join
4 on to this and it wasn't too long ago when Council
5 Members were being told that files were being walked
6 from one side of an agency to another.

7 So, to get to this point where we can
8 computerize, digitize and protect that information
9 and stream it to the cloud, it's a good day. So,
10 thank you Chair Holden.

11 CHAIRPERSON HOLDEN: Thank you Council Member
12 Vallone. I will now turn it over to our Moderator
13 Committee Counsel Irene Byhovsky to go over some
14 procedural items for this hearing.

15 COMMITTEE COUNSEL: Thank you Chair Holden. I am
16 Irene Byhovsky, I am the Counsel to the Committee on
17 Technology and I will be moderating this hearing.
18 Before we begin, I would like to remind everyone that
19 you will be on mute until you are called on to
20 testify. At which point, you will be unmuted by the
21 host. Please be aware that there could be a delay in
22 the muting and unmuting, so please be patient.

23 I will be calling on panelists to testify.
24 Please listen for your name to be called as I
25 announce the panelists. We will first be hearing

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2 testimony from the Administration followed by
3 testimony from members of the public.

4 During the hearing, if Council Members would like
5 to ask questions of the Administration or a specific
6 panelist, please use the Zoom raise hand function and
7 I will call on you. We will be limiting Council
8 Members questions to five minutes, which includes the
9 time it takes to answer the questions.

10 Also, please note that all panelists aside from
11 the Administration will be limited to a five minute
12 timer, so that we might accommodate all who has
13 registered to testify. When you are called to
14 testify, please state your name and organization you
15 represent for the record.

16 We will now call representatives of the
17 Administration to testify. We will be hearing from
18 Jessica Tish Commissioner of the Department of
19 Information, Technology and Telecommunications.
20 Steven Bezman, Deputy Commissioner and Yosef Lehrman,
21 Deputy Commissioner of Information Security and Chief
22 Information Security Officer will also be available
23 for Q&A. At this time, I will administer the
24 affirmation to each representative.
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2 I will call on each of you individually for a
3 response. Please raise your right hands.

4 Commissioner Tish, Deputy Commissioner Bezman,
5 Deputy Commissioner Lehrman. Do you affirm to tell
6 the truth, the whole truth and nothing but the truth
7 before this Committee and to respond honestly to
8 Council Member questions? Commissioner Tish?

9 JESSICA TISH: I do.

10 COMMITTEE COUNSEL: Deputy Commissioner Bezman?

11 STEVEN BEZMAN: I do.

12 COMMITTEE COUNSEL: Deputy Commissioner Lehrman?

13 YOSEF LEHRMAN: I do.

14 COMMITTEE COUNSEL: Thank you. I now invite
15 Commissioner Tish to present her testimony.
16 Commissioner Tish, you may begin when you are ready.

17 JESSICA TISH: Thank you. Good afternoon, Chair
18 Holden and members of the Committee on Technology.
19 My name is Jessica Tisch and I am the Commissioner of
20 the New York City Department of Information
21 Technology and Telecommunications and the Citywide
22 Chief Information Officer.

23 I am joined today by Yosef Lehrman, DoITT's
24 Deputy Commissioner for Information Security and
25

1
2 Chief Information Security Officer and Steven Bezman,
3 DoITT's Deputy Commissioner for Applications.

4 I am pleased to join you at today's oversight
5 hearing on cloud-computing systems and to discuss
6 preconsidered legislation that would require DoITT to
7 conduct an assessment and report on the feasibility
8 of transferring city agencies' electronic data to the
9 cloud. The City has been leveraging cloud solutions
10 for nearly a decade. The City also has a robust
11 citywide policy on cloud that all agencies are
12 subject to.

13 The agencies have hundreds if not thousands of
14 applications running in the cloud already. As part
15 of the City's COVID-19 response efforts, for example,
16 we built dozens of applications and every single one
17 of them ran in the cloud. In fact, I'd be hard
18 pressed to come up with a new application that we are
19 developing that isn't run in the cloud today beyond
20 the City's next gen 911 system and this is a good
21 thing because frankly the city's data centers can't
22 support the rate of development required to meet the
23 City's needs.

24 As security goes, there are different flavors of
25 cloud solutions and different levers on the tech and

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2 policy side that can be pulled. For example, FEDRAMP,
3 GovCloud, encryption, in transit and at rest,
4 encryption keys. Point is, it's a mistake to paint
5 the security implications of cloud use with a broad
6 brush. Some solutions are quite secure and others
7 quite insecure. Same is true for data privacy.

8 Per the City's policy, each cloud solution and
9 its associated security and data privacy controls
10 must align with the type of data it is collecting.
11 For example, is it collecting HIPAA data? Personally
12 identifiable information, or is it just a survey with
13 no personally identifiable information?

14 I will now turn to the legislation we are
15 considering today. The proposed preconsidered
16 legislation would require DoITT to conduct an
17 assessment of the feasibility of transferring city
18 agencies' electronic data to the cloud. The
19 Department would also be required to submit a report
20 of the results of the assessment to the Council.

21 While we appreciate and share the Council's
22 interest in cloud-based computing, because the City's
23 use of the cloud is well under way and has been for
24 nearly a decade, conducting a feasibility study at
25 this time would not be an efficient or productive use

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2 of City resources. I am looking forward to hearing
3 more from the Council today on your goals for this
4 bill and to continue discussing this piece of
5 legislation.

6 Thank you for the opportunity to give testimony
7 on the proposal. With that, I am happy to take the
8 Council's questions.

9 COMMITTEE COUNSEL: Thank you Commissioner Tish.
10 I will now turn over to questions for the Chair.
11 Panelists please stay unmuted if possible during this
12 question and answer period. Thank you. Chair
13 Holden, you may begin your questions.

14 CHAIRPERSON HOLDEN: Thank you. Thank you so
15 much. Thank you Commissioner for your testimony and
16 thank you for all your great work. I just have a few
17 questions then I will turn it over to some of my
18 colleagues. How many physical data centers does the
19 city currently have?

20 JESSICA TISH: Oh God, I can say, I don't know
21 how many the City has because some agencies have
22 their own data centers. At DoITT, we have let's see,
23 three main, three data centers.

24 CHAIRPERSON HOLDEN: But isn't DoITT building a
25 new data center in Brooklyn?

1 JESSICA TISH: No.

2 CHAIRPERSON HOLDEN: No, okay, well, alright.

3 This is what we heard but alright, we will check on
4 that. Does the City own the real estate where these
5 data centers are located?
6

7 JESSICA TISH: No, the City leases the real
8 estate.

9 CHAIRPERSON HOLDEN: Yeah, so, you know, this is
10 what I – you know, part of this hearing is to look at
11 you know, is this cost effective you know, because if
12 we are leasing them, how much is the rent, you know,
13 utility and other costs as opposed to sort of phasing
14 some of them out if we can. Like you know, when does
15 the lease or agreement expire? Can we give up?
16 Like, I mean, some of the questions we have to look
17 at and I guess you are working on it but I just have
18 to ask it, you know, can we give us some data centers
19 like systematically you know, year by year work some
20 of them out to save money?

21 JESSICA TISH: Well, so let's discuss the premise
22 of that. I am someone who throughout my career as a
23 CIO in New York City, so that's dating back to 2014,
24 has aggressively pushed toward the cloud. So, that
25 started in my work at the NYPD where NYPD really took

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2 a leadership position in this area and was one of the
3 first agencies in the City of New York to start
4 leveraging cloud based solutions, platform is a
5 service, infrastructure is a service and the like.

6 What I will say is, yes, leases are expensive but
7 it is not perfectly obvious to me that cloud, full
8 cloud solutions at this time either can replace all
9 of our physical data centers in the near to mid-term.
10 Or that given current pricing, it would be cost
11 effective to do so at this time.

12 CHAIRPERSON HOLDEN: So, do you know – do we have
13 any – maybe we can get it, the numbers but if you
14 know, the approximate cost of maintenance on the
15 city's current data centers you know, and how does
16 this cost break down? You know, how does this
17 approximate cost change with an expansion or you
18 know, if we eliminate. So, we need to look at the
19 numbers of you know versus the cloud, versus these
20 data centers and also the benefits of moving data to
21 the cloud.

22 So, you know is there anybody? Are you doing
23 that? Are you assessing the costs of having these
24 data centers and transferring data from them?

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2 JESSICA TISH: I can speak right now but can
3 definitely follow up with your office on the leasing
4 costs for the data center. You know, I misspoke and
5 would like to correct one thing. I believe that the
6 City actually owns one of the data centers that we
7 leverage and that is the data center that is a part
8 of our Peace Act 2, that's our 911 public safety
9 answering system center up in the Bronx. There is a
10 data center there and the City does own that space
11 but I can get you the costs associated with the
12 leases.

13 In terms of the affordability of moving data to
14 the cloud. When I said that I didn't think that it
15 made — that we would be able to move fully to the
16 cloud in the near to mid-term and one of the factors
17 I stated was cost. I believe that that will change
18 over time and that will be based on bulk discounts
19 that the cloud providers could offer us.

20 So, if we really leverage the City's buying power
21 and say, alright, if we put x percent of our data or
22 x amount of our data in this cloud, can we get a 40
23 percent discount on the rates? So, a lot of the
24 affordability question is associated with the
25 discounts that the city is working to secure.

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2 CHAIRPERSON HOLDEN: Yeah, on that, the city
3 agencies are, what we heard, the city agencies are
4 you know, contracting their own deals with cloud
5 companies obviously, cloud computing. Wouldn't it be
6 better to get all of the agencies together and bundle
7 it and get a big discount? I mean, that's how it
8 works right?

9 JESSICA TISH: So, I am indeed a big fan of
10 leveraging the City's buying power and getting just
11 what I said and what you said, is bulk discounts and
12 we are working now to put master services agreements
13 in place where the City would really see those bulk
14 discounts. I have been working on a few of those,
15 not just in the area of cloud computing but in other
16 areas. You know the telecom, other things and that
17 has been a big area of focus for me over the past
18 year that I have held this job.

19 CHAIRPERSON HOLDEN: So, but right now, all the
20 agencies are doing their own deals. So, have you
21 made any headway with trying to solve that and you
22 know, just to bundle it like I said.

23 So, how many agencies are on board with you so
24 far in doing that?

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2 JESSICA TISH: So, I can't get agencies on board
3 until I have the agreements in place. So, let me
4 give you an example. We are working on a master's
5 Services Agreement. Sorry, an Enterprise License
6 Agreement with Microsoft now. I need that agreement
7 to be registered and I am hoping that that will be
8 done by the end of the year. Before I can offer
9 agencies the bulk discount that really makes that
10 type of policy beneficial. But it is definitely
11 Chair Holden, to respond directly to your question,
12 something that we are really looking to press hard on
13 over the next year as these agreements are coming
14 into place.

15 CHAIRPERSON HOLDEN: Alright, just to go back to
16 the leases on data centers. Do you know how long
17 some of these leases are? Are we locked in you know,
18 for five years, ten years, twenty years?

19 JESSICA TISH: I don't have in front of me now
20 the expiration date on many of these, on any of these
21 leases but I can get that information to you. What I
22 do know is that they are at least five years away and
23 the reason that I know that or strongly believe that
24 is because if the data center lease expires in less
25 than five years, then the equipment that we put in

1
2 them is not capitally eligible. So, I know based on
3 my work procuring equipment that all of the leases
4 have at least five years left on their terms.

5 CHAIRPERSON HOLDEN: At a previous hearing, the
6 Technology hearing, you mentioned that you thought
7 that we had a good balance between the data centers
8 and the cloud. Do you still feel that? You know,
9 you said the new, obviously the new information and
10 new software is all on the cloud now the latest. But
11 do you feel that there is a good balance in New York
12 City at this point?

13 JESSICA TISH: You know me, I love to modernize
14 and what we are working on like all day everyday is
15 getting rid of legacy applications and replacing them
16 with new applications. Over the past year, as I
17 stated in my testimony, all of the new application
18 development that I have overseen at DoITT has been
19 cloud based.

20 And so, what I think the - what I know the
21 strategy to be is to replace legacy on Prem systems
22 with modern cloud based systems. And so, you will
23 naturally see over time progress in that area as we
24 decommission legacy, it goes out of the data center
25 and we build new in its place. I can't just snap my

1 fingers, I wish I could, snap my fingers and turn off
2 of the legacy systems but what I can say is that this
3 is the strategy and this is the way of the future.

4 Now, I want to clarify one thing. I cannot
5 replace 100 percent of the city's systems with cloud
6 based solutions. So, as I think I said in my
7 testimony, the 911 system. I don't envision, at
8 least as long as I am here, putting that system in
9 the cloud. Why is that not a good candidate? So,
10 for me, it is not a good candidate because I need
11 that 911 system to be available all the time.

12 And so, if there is an internet outage. If a
13 cloud provider has a platform problem, I can't risk
14 not being able to take that 911 call. So, there are
15 certain systems and it is quite limited but there are
16 certain systems that in my thinking do not belong to
17 day in the cloud and I don't see a near or mid-term
18 path to moving them to the cloud. But again, those
19 are few and far between.

20 CHAIRPERSON HOLDEN: Just a few more questions,
21 then I am going to turn it over to my colleague Paul
22 Vallone. What percentage of the City's data is cloud
23 ready as of this hearing date? Do you have an
24 estimate?
25

1 JESSICA TISH: I don't.

2 CHAIRPERSON HOLDEN: Okay.

3 JESSICA TISH: I can tell you though, that all of
4 DoITT's new development is cloud based. So, I will
5 just give you some examples because it may help,
6 right. The GIS system is the subpoena system, data
7 platform, portions of the data platform, like these
8 are massive systems that would, many of them support
9 and touch and effect so many different agencies and
10 these are all places where we set the strategic
11 direction to move to the cloud.

12 CHAIRPERSON HOLDEN: Okay, let me just one or two
13 more questions and then I will turn it over. Let's
14 talk about the legacy systems in the city. If you
15 were to estimate, what percentage of the systems that
16 the city owns and operates are legacy systems?

17 JESSICA TISH: Fewer today than yesterday or last
18 year.

19 CHAIRPERSON HOLDEN: 40 percent, is it 30?

20 JESSICA TISH: Oh, no, it's definitely higher
21 than that but you have to remember Chair and Council
22 Members, these systems have been built over decades
23 and so there are so many of them and I wouldn't be
24 able even to begin to estimate it. Other than to say
25

1
2 that we are focused on picking off legacy system by
3 legacy system and modernizing and upgrading. And in
4 my budget, that's what we are spending our money on.
5 I like to put my money where my mouth is and we are
6 modernizing everything.

7 So, I will give you a great example, city's
8 email. We now have every agency I think except for
9 one, which should happen soon on cloud base email, on
10 Office 365. And by the way, I am desperate for the
11 Council to move to Office 365.

12 But just that progress over the past year when
13 you had more than 75 percent of city agencies on you
14 know, on Prem email, that I think is a really good
15 example of the citywide progress that we are making
16 as part of our modernization efforts. That is what I
17 am here to do, modernize.

18 CHAIRPERSON HOLDEN: So, would you agree that the
19 legacy systems are not cloud ready and it would be
20 challenging and almost impossible to move them to the
21 cloud?

22 JESSICA TISH: Oh yeah, I mean, we may have to
23 migrate data but the approach is to build new systems
24 in the cloud.

1
2 CHAIRPERSON HOLDEN: I know but do you have
3 trained personnel to facilitate the data moving
4 process? You know, you have to move some data
5 obviously.

6 JESSICA TISH: Yes, we have a whole cloud team.
7 We have a whole team of people who are focused on
8 that.

9 CHAIRPERSON HOLDEN: So, you wouldn't have to
10 hire a new staff or contractors to carry out the data
11 moving.

12 JESSICA TISH: It depends on how quickly you want
13 to get it done right. It depends you know -

14 CHAIRPERSON HOLDEN: You like to do things
15 quickly, right.

16 JESSICA TISH: But people are not the only
17 factor. The number of people are not the only factor
18 right. It's about budget to build new systems. It's
19 about working hand and hand with the agencies. Some
20 of whom can't have any disruption or downtime in the
21 transition. There are so many factors that go into
22 it. It is so easy. It is my favorite thing to do is
23 to build a new system, meaning green field, it is not
24 something that agency ever used before. It is not
25 something they rely on to do their business. Sort of

1
2 build a brand new system in the cloud is much more
3 straight forward than to replace an existing system
4 with a cloud based system.

5 CHAIRPERSON HOLDEN: Okay, on that note, I am
6 going to turn it over to my colleague Paul Vallone
7 for some questions on his legislation.

8 COUNCIL MEMBER VALLONE: Thank you Chair Holden.
9 Good afternoon Commissioner, good to see you again.

10 JESSICA TISH: Good to see you.

11 COUNCIL MEMBER VALLONE: So, it sounds like we
12 are saying the same thing.

13 JESSICA TISH: I hope so.

14 COUNCIL MEMBER VALLONE: Well, but we are and we
15 aren't because you didn't support any opening
16 testimony. The bill that Council Member Ritchie
17 Torres and I first put in to the congress member.
18 The point of it is to really get you on the path to
19 the transition. But as Chair Holden just mentioned,
20 we have antiquated legacy systems. We have some that
21 you are hoping to transition quickly and we then we
22 have a future idea or plan to hopefully get
23 everything at some point or streamlined with the - I
24 guess the exception of [DOG BARKING]. Any time I get

1
2 a delivery, I have my little one who thinks – hang on
3 one second.

4 Okay, there we go, which systems wouldn't be safe
5 to do, also you mentioned 911. So, for me having a
6 comprehensive plan that outlines what infrastructure
7 can quickly and readily be transitioned versus the
8 ones that are more difficult as legacy projects that
9 may take more time. Accessing where our data is
10 currently stored and the cost of that versus
11 transitioning to a cloud based system, which I think
12 small businesses or large businesses will tell you it
13 is cheaper than operating the software on hardware of
14 storage data versus cloud storage.

15 I just wanted to get some clarification.
16 Wouldn't we want to assist you and get that process
17 moving? The bill is requiring a yearlong study,
18 which you are already doing to prepare for that
19 transition. Which it sounds like obviously your
20 future vision wants to get there anyway, so why
21 wouldn't we want to that?

22 JESSICA TISH: So, the transition is underway and
23 the commitment is made and the policy that the City
24 has around it, as I mentioned in my testimony I think

1
2 is robust. So, maybe I could go into that a little
3 bit for you to give some of that background.

4 Back in 2016, I believe, the City put in place a
5 citywide policy on cloud which sets not only the
6 general principles on what and how we would
7 transition to the cloud. It goes into all different
8 types of ways that the city could and would leverage
9 the cloud. Infrastructure is a service, platform is
10 a service, software is a service. Identity as a
11 service. We are firing on all cylinders on all four
12 of those.

13 The other thing that the policy does, is it sets
14 out the rules of the road for each agency and says,
15 as you are looking to develop new solutions in the
16 cloud, this is the review that is required. These
17 are the standards that you have to meet and so, that
18 process is very much in place. Like to give you a
19 sense of the numbers, last year calendar year 2019,
20 my agency along with Cyber Command did 149 of them.

21 This year so far, we have done 175 of them. I
22 think my reaction to the proposed legislation was in
23 like the assessment nature of it. So, I feel like we
24 are past that. We have done -

1
2 COUNCIL MEMBER VALLONE: So, what would be the
3 next thing? I hate doing anything that is not going
4 to be time worthy for anyone. I don't want to create
5 -

6 JESSICA TISH: Yeah.

7 COUNCIL MEMBER VALLONE: But if we can tweak the
8 bill; that's what the hearing is all about and Chair
9 Holden has been talking about that and the other
10 Council Members. Most of us are coming down to the
11 end of term and at the end of the Administration. I
12 do not want to hand off to the next crew that is
13 coming in, a system that's does not already have an
14 infrastructure, plan in place to transition.

15 I am a big proponent of time limits for agencies,
16 otherwise it just doesn't get done. Maybe we should
17 reenter that, the agencies must respond within a
18 certain time as to what can be transitioned, what
19 can't be transitioned and how best to do it to get
20 that done quickly.

21 So, if you are having conversations with
22 Microsoft, wouldn't it be better to negotiate those
23 licenses with knowledge of the amount of information
24 that is going to be transferred? I am sure they
25 would be salivating to get that contract if they new

1
2 that 25 of the agencies were going to be
3 transitioning as opposed to maybe just Parks or to
4 agencies.

5 JESSICA TISH: Okay, so, yes.

6 COUNCIL MEMBER VALLONE: I want to work with you
7 to make it happen. I don't want to create more
8 latter's of things to do.

9 JESSICA TISH: So, here is the thing. If I came
10 here today and testified that no, Council Member
11 Vallone, I am going to double down on data centers.
12 I want to continue to build everything on pram. I
13 don't want to build anything in the cloud, then fine.
14 Like, push me to do an assessment. Of course.

15 What I came here today to say is that I share
16 your vision for what the future of New York City's
17 technology should look like. I share your interest
18 in modernizing. I have really led the charge in that
19 area at the agency that I previously worked at, at
20 the NYPD and that's what I came to do on a much
21 larger scale.

22 So, the other point that I wanted to address was
23 on deadlines. And there is no one that I know who
24 likes to drop the hammer or set a deadline more than
25 me and if I set a deadline and you don't miss it,

1
2 like you will be hard pressed to get me to back away
3 from it. And that's because I feel real urgency
4 around this stuff. I want to modernize.

5 The reason that I don't set a blanket deadline
6 for each agency is because first, two reasons, first,
7 I want it done once and I want it done right. And
8 second, I can't sacrifice the security and privacy
9 concerns in getting those done, those factors deeply
10 thought through for progress and speed.

11 And so, as I was mentioning as part of our review
12 process. When any agency wants to move into the
13 cloud, we have an approval process where DoITT and
14 Cyber Command work together to review the use of the
15 cloud or the proposed use of the cloud and to make
16 sure that the security protocols are in place that
17 are commensurate with the type of data that is
18 proposed to be collected or stored.

19 So, it is not one size fits all and then, once
20 the agency, once they get that initial approval; so
21 think of that as like gating. Can we do this yes or
22 no? Once the agency has built the system, there is
23 yet another software security assurance review where
24 we do Cyber Command does pin tests and the like to
25

1
2 assess. Do they actually meet these standards before
3 the system goes live.

4 COUNCIL MEMBER VALLONE: There is a series of
5 phases and I appreciate that and I because it is not
6 - I want to turn it back over to the Chair and the
7 other members. But it sounds like what you just
8 elicited for us, is the comprehensive plan and that's
9 basically what we are asking to see and have because
10 as your vision is, we have to set that ground work as
11 Council Members down in writing to see it to get done
12 because we don't know who is going to fall in
13 anybody's shoes and we don't want to reinvent the
14 wheel.

15 So, getting the process done in a plan that can
16 be transitioned, so that we can give the right amount
17 of resources. I mean, we really don't have the data
18 today from the agency telling us what the cost would
19 be. How many agencies would be on board. What the
20 costs are maintaining the current storage versus
21 using cloud storage. All the things to make the
22 definitive decisions on are really just based on, we
23 know you want to do it. We know you want to get it
24 done but that's not enough. We have to see the plan
25 and move forward.

1
2 So, I would just say and I am going to turn it
3 back over to the Chair, the reason why we are having
4 the hearing is because everyone is on board to make
5 that happen. To get the tools to make it happen.
6 Have a plan set forth for the future to have that
7 happen. But the advocates who are on board today to
8 help us to see which one's can be done and through
9 your guidance to get it done.

10 So, we are not trying to hinder it, we are trying
11 to help. Thank you Chair for giving me some time.

12 CHAIRPERSON HOLDEN: Thank you Council Member
13 Vallone. Are there any questions from my colleagues?

14 COMMITTEE COUNSEL: Council Member, I do not see
15 anyone else wishing to ask questions and I want to
16 ask if you have any additional questions to the
17 panelists?

18 CHAIRPERSON HOLDEN: I can ask some questions if
19 my colleagues don't. I have a few more Commissioner.
20 What cloud providers are these agencies that you
21 mentioned that they are making their own contracts
22 with? What are some of the providers that have
23 contracted with the City, the cloud providers?

24 JESSICA TISH: Oh, geez, you name it, we probably
25 work with them. Off the top of my head we leverage

1
2 Office 365 with Microsoft. We leverage Dynamics with
3 Microsoft. We use AWS, we use Google Cloud. In
4 terms of platforms, we work with Sales of course, I
5 said dynamic already. We did a lot of COVID related
6 work with Encore, I mean dozens and dozens of
7 companies. I want to just correct one thing I may
8 have given you the wrong impression on something.

9 DoITT holds many citywide contracts and can
10 contract for other agencies. So, some agencies have
11 their own contracts but we are trying to consolidate
12 that as I explained, to leverage the city's buying
13 power into DoITT.

14 CHAIRPERSON HOLDEN: So, what is your experience
15 in working with the cloud providers?

16 JESSICA TISH: Well, I mean like anything else,
17 it depends which one. All you know, companies are
18 different and I think there are so many that offer
19 great products and have been great partners to us.

20 CHAIRPERSON HOLDEN: But generally, are you
21 pleased? Like, if you had to just kind of summarize
22 it, your experiences have been okay? You know,
23 great?

24 JESSICA TISH: Well, I mean, I don't think I
25 would be here telling you that my plan is to move so

1
2 much of what the City of New York does in the cloud
3 if I didn't have experience working with some really
4 good partners.

5 CHAIRPERSON HOLDEN: Okay, alright. Other than
6 the 911 system, which you won't move to the cloud,
7 what other data should not be moved let's say to the
8 cloud?

9 JESSICA TISH: I think that the decisions around
10 that would really focus on how much of time the
11 system absolutely must have and for that reason, in
12 terms of applications, 911 seems like the big one.

13 CHAIRPERSON HOLDEN: Alright. So, that it,
14 that's about the only thing you wouldn't -

15 JESSICA TISH: Yeah but remember there is much
16 more to running an IT organization than applications
17 right. There is also infrastructure. There are
18 network. I mean, there is more than applications but
19 in terms of applications, the one that stands out in
20 my mind that I can't have subject to an internet
21 outage is the 911 system.

22 CHAIRPERSON HOLDEN: Just on the legislation that
23 Council Member Vallone has introduced, according to
24 tech advocates, the last time there was a
25 comprehensive data or computing systems audit was in

1
2 2001. Obviously, much has changed over the last 20
3 years in technology. What is DoITT doing to ensure
4 that citywide systems are evaluated for
5 modernization?

6 JESSICA TISH: Well, we are doing the work of
7 modernizing them. So, for example, as platforms
8 become end of life, we are identifying systems that
9 run on those platforms and letting agencies know that
10 they need to modernize and they can't continue to run
11 on end of life platforms.

12 Yosef, do you want to speak a little bit to that?

13 YOSEF LEHRMAN: Sure, so we have promulgated
14 policies and we have sent those policies out to
15 agencies. Essentially, if you are running on an
16 operating system or an application that is normally
17 supported by the manufacturer, DoITT is not going to
18 support that much longer.

19 You need to move off of that platform. And very
20 often to your point sir, that is going to require an
21 upgrade of the application. When you need to upgrade
22 the application, we look at that and say, okay, do we
23 want to keep this application on Prem? Do we want to
24 just perpetuate the current model or would we like to

1
2 move this to the cloud and you know, redo it in a
3 line with our newer model.

4 CHAIRPERSON HOLDEN: But is it difficult to audit
5 computing systems?

6 YOSEF LEHRMAN: It is not difficult to audit the
7 computing systems. The difficulty lays in what are
8 you trying to find from the audit. So, if you wanted
9 to just get a sense of how many systems we have
10 operating systems running, that is not difficult.
11 You know, if you wanted to get details on the
12 application and how it works, that might be a little
13 bit more difficult.

14 CHAIRPERSON HOLDEN: So, when can we see an
15 updated audit from DoITT?

16 JESSICA TISH: It depends what you want the
17 audit, as Yosef said, it depends on what you want the
18 audit to show. If you want to see how many platform
19 - how many systems are running a given platform,
20 like I could turn that around for you really fast.
21 If you want every city agency to document every
22 single system it runs and answer detailed questions
23 about it, you could be waiting a really long time.

24 CHAIRPERSON HOLDEN: So, in doing the audit,
25 would you have free rein to do the audit of agencies?

1
2 JESSICA TISH: I couldn't do the audit. I
3 couldn't do the audit of every agency on my own.
4 That's the point I was trying to make.

5 You really need the agencies that use the system.
6 In some cases, have built the system, control the
7 system, maintain the system. You really need to work
8 hand and hand with doing them. If it was just a
9 question of systems that DoITT builds and controls,
10 that's easier but again, you have the agencies that
11 are actually using the system that you need to work
12 with.

13 CHAIRPERSON HOLDEN: Alright, any other questions
14 from Council Members?

15 COMMITTEE COUNSEL: No Chair, I don't see anyone
16 else.

17 CHAIRPERSON HOLDEN: Okay, I am just going to
18 switch gears for a second Commissioner. For a Link
19 NYC update -

20 JESSICA TISH: Seriously.

21 CHAIRPERSON HOLDEN: Let me just give you a
22 little background here. In response to our follow up
23 letter, you wrote, "Since I appeared before you in
24 March, City Bridge has worked to bring in a new
25 strategic partner willing to make a capital infusion

1
2 in the program. We are working with City Bridge now
3 to finalize the terms of an amendment to the
4 franchise agreement design to return the Link NYC
5 program to a revenue generator for New York City.
6 However, should this progress stall, I stand ready to
7 use the various tools at my disposal to ensure City
8 Bridge either fulfills its contractual obligations or
9 that the city collects the \$100 million in security
10 on the Link program that we hold."

11 Could you update us on the progress?

12 JESSICA TISH: What's the date of that letter?

13 CHAIRPERSON HOLDEN: That was I guess March.

14 COMMITTEE COUNSEL: June of this year.

15 CHAIRPERSON HOLDEN: Yeah, March, March, oh no
16 June. I am sorry, June.

17 COMMITTEE COUNSEL: The letter was in June.

18 CHAIRPERSON HOLDEN: June.

19 COMMITTEE COUNSEL: I believe June 24th.

20 JESSICA TISH: Hmm, hmm, that is still underway.

21 CHAIRPERSON HOLDEN: I am sorry, I missed that.

22 JESSICA TISH: That is still underway and I look
23 forward to updating you soon, when I have more
24 information.

1
2 CHAIRPERSON HOLDEN: How long is this going to go
3 on? You know, we have to decide on this. We have to
4 get to the bottom of it and make sure that they
5 fulfill their obligations.

6 JESSICA TISH: I couldn't agree more that this is
7 an issue that we need closure on and what I can say
8 is that our franchise team is very focused on this
9 and bringing to resolution that is going to work for
10 the City.

11 CHAIRPERSON HOLDEN: Okay, just on a final note,
12 I want to thank you for the upgrade for 311 with we
13 can send photographs now on parking issues,
14 violations and others. It is so great to do that and
15 I must say on my first try at it, I got a five minute
16 response. I know you know; I don't know if that was
17 a coincidence but - and I asked the police and they
18 did get the photo. They did see the photo, so it is
19 working Commissioner. Thank you so much for that.

20 JESSICA TISH: Thank you for the feedback. It
21 was your idea to photo enable those service requests.

22 CHAIRPERSON HOLDEN: Well, anytime you can
23 provide evidence and show a particular problem but I
24 hope that expands to all the agencies and that we can
25 certainly get obviously some upgrades on 311. There

1
2 is still a lot to do you know, for you know certain
3 violations. It is hard to actually communicate on
4 the app but it is definitely a giant step forward.
5 Commissioner, I want to thank you for that and any
6 more Council Member questions before we move on?

7 COMMITTEE COUNSEL: No, no more questions.

8 CHAIRPERSON HOLDEN: Okay. Thank you
9 Commissioner, thanks to your team.

10 JESSICA TISH: Thank you.

11 CHAIRPERSON HOLDEN: Thank you everybody. Have a
12 good holiday, great holiday.

13 JESSICA TISH: Thank you. The same to you.

14 CHAIRPERSON HOLDEN: Okay.

15 COMMITTEE COUNSEL: I also want to thank you all
16 and we will now turn to public testimony. I will be
17 calling groups of panelists. Once your name is
18 called to testify, our staff will unmute you and the
19 Sergeant at Arms will set the timer to announce that
20 you may begin. We ask each panelist to limit their
21 testimony to five minutes. Council Member will have
22 an opportunity to ask questions after each panels of
23 witnesses.

24

25

1
2 I would like now to welcome our first panel to
3 testify. And our first panel will be Amy Waggoner,
4 Tristan Morel L'Horset and Ryan Naples.

5 Ms. Waggoner, you may begin when Sergeant at Arms
6 will set the clock.

7 SERGEANT AT ARMS: Time begins now.

8 AMY WAGGONER: Thank you Chairman Holden and
9 member of the Committee for hosting this hearing. I
10 am Amy Waggoner, Senior Director of State and Local
11 Government Affairs for the Eastern half of the U.S.
12 for Sales Force.

13 Salesforce is a global leader in cloud enterprise
14 software for customer relationship management,
15 providing software as a service and platform as a
16 service offerings to businesses, governments and
17 other organizations across the world. Our business
18 model is subscription-based, allowing for faster
19 deployment of technologies and greater agility. We
20 help our customers connect with their customers or
21 employees or citizens in a whole new way using cloud,
22 social and mobile technologies.

23 Salesforce is committed to a set of core values
24 of trust, customer success, innovation and equality.
25 Since we were founded, we have pioneered the 1 to 1

1
2 to 1 philanthropic model and each year we commit to
3 giving 1 percent of our employee time, 1 percent of
4 our product and 1 percent of our equity back to
5 communities around the world.

6 New York has been core to Salesforce's growth,
7 with a physical presence since 2006. Today, we have
8 more than 1,500 employees in Salesforce Tower New
9 York located right at the foot of Bryant Park and we
10 give every employee 56 hours of volunteered time of
11 each year and last year, our New York City employees
12 volunteered over 35,000 hours in their communities.

13 Salesforce serves our customers through what is
14 known as a multi-tenant application architecture,
15 designed for security, efficiency, availability and
16 rapid innovation. Our multitenant architecture is
17 analogous to that used to provide online banking,
18 which can be accessed and used by thousand of users
19 simultaneously through the logical, not physical,
20 separation of data. With purpose-built industry
21 functionality and all the capabilities of the
22 Salesforce platform, government agencies can increase
23 employee productivity, accelerate time to value and
24 deepen citizen trust with databased decisions with
25 every interaction.

1
2 When it comes to privacy and security, at
3 Salesforce, trust is our number one value. The
4 protection of our customers' data is paramount and we
5 safeguard that data with a robust and comprehensive
6 privacy and security program. To that end, we have
7 undertaken significant efforts towards developing a
8 privacy program that accounts for the ever evolving
9 landscape of global data protection laws.

10 For example, Salesforce was among the first
11 software companies to achieve approval for our
12 Processor Binding Corporate Rules in November 2015.
13 Our government customers use our products to work
14 with some of their most sensitive data and we have
15 undertaken significant steps to develop a
16 comprehensive data protection and security program
17 built on five principles that highlight our
18 commitment and focus on trust. Those are customer
19 control, security, transparency, compliance and
20 partnership.

21 Salesforces technical security measures include
22 protections against system vulnerabilities, logical
23 separations of customer data, robust network
24 security, encryption of data and transmission and
25 options for encryption of data at rest.

1
2 We built security into everything we do so that
3 our customers know that their data is theirs to be
4 accessed when, where and how they intend.

5 And lastly, utilizing Salesforce means that you
6 can serve your citizens more effectively. Digital
7 transformation promotes innovation, better service
8 quality and operational resilience. We believe
9 responsible cloud outsourcing presents a valuable
10 opportunity to deliver better outcomes for citizens
11 in an all-digital, work from anywhere environment.
12 And the necessity for this has been amplified by the
13 requirements for work continuity throughout the
14 COVID-19 pandemic.

15 With Salesforce, you can implement mission ready
16 technology with innovative cloud products created for
17 government. And sales forces industry leading
18 offerings were designed to solve every need in the
19 public sector with full regulatory compliance and
20 robust security.

21 Thank you again for your time today.

22 COMMITTEE COUNSEL: Thank you very much Ms.
23 Waggoner and our next panelist is Tristan Morel
24 L'Horset.

25 SERGEANT AT ARMS: Time starts now.

1
2 TRISTAN MOREL L'HORSET: Good afternoon Chair
3 Holden and members of the Committee. I am Tristan
4 Morel L'Horset, a Senior Managing Director with
5 Accenture and I work within or firms practice.

6 Accenture is a global professional services
7 company with leading capabilities in digital, cloud
8 and security. We employ more than 5,000 New Yorkers,
9 operate in more than 120 countries and 40 industries,
10 including the government sector and are opening a
11 flagship office at 1 Manhattan West this spring.

12 I echo the points made by today's earlier
13 presenters and will highlight additional benefits
14 that cloud can yield. First, simply put, cloud can
15 be a source of tremendous technical innovation.
16 Cloud enables systems to grow with the changing
17 demands of the city while also minimizing cost. It
18 also allows for on-demand availability of services,
19 as well as more agility and faster deployment of
20 these services.

21 Cloud saves entities a large amount of time that
22 would otherwise be spent on procurement, capacity
23 planning and solicitation of traditional
24 infrastructure resources which ultimately allows
25 faster delivery of value to all NYC constituents. As

1
2 an example, New York City has taken some important
3 initial steps to harness the power of the cloud for
4 its residents. We have been honored to partner with
5 the city on some of these initiatives, including
6 creating a mobile app to help residents apply for
7 SNAP and TANF benefits as well as the Fair Fares
8 program.

9 In short, cloud can enable interactive services
10 for all constituents to align with their needs and
11 which can be deployed with higher speed to respond to
12 market events and changes, such as COVID-19. For
13 example, when the pandemic first began, our teams in
14 Europe worked with a Madrid healthcare system to
15 urgently set up and operationalize new emergency
16 medical locations, such as fairgrounds, hotels into
17 the health network to be able to operate as the rest
18 of the provider's locations.

19 Additionally, a chatbot was deployed to aid with
20 the triage of cases as the healthcare system was
21 initially overwhelmed in its response to the higher
22 number of COVID cases. These are the types of
23 capabilities that cloud can bring to large cities and
24 enable them to deliver better services to their
25 constituents.

1
2 Finally, cloud has been touted as the center of
3 future innovation. And with this innovation will
4 come the attraction of more high-end talent to the
5 city. Cloud is not only attractive to top talent
6 because of its pioneering virtues but because it is
7 also able to remove the barriers that inhibit growth
8 to make it simpler to handle IT resources and allow
9 companies to develop faster as a result. This will be
10 critical to the success of the city in the post-
11 pandemic era as New York City looks to propel itself
12 into modern day technology and for new ways to manage
13 its operations and growth. Thank you.

14 COMMITTEE COUNSEL: Thank you very much and our
15 next panelist is Ryan Naples.

16 SERGEANT AT ARMS: Time starts now.

17 RYAN NAPLES: Good Afternoon Chair Holden and
18 Members of the Committee, I am Ryan Naples, Deputy
19 Director at Tech:NYC, an advocacy group for NYC's
20 tech community representing more than 800 companies
21 and organizations.

22 COVID-19 has impacted New York in profound ways
23 and it will take years for the city to fully recover.
24 The city has a \$4 billion budget deficit for next
25 year. Meanwhile, city services are now a matter of

1
2 life and death for everyday New Yorkers. Better
3 technology infrastructure would improve agency
4 operations online, better secure data and safe the
5 City money. This is ultimately why increasing usage
6 of cloud computing is more important now than ever.
7 Put simply, New York City government systems can be
8 smarter, faster, more flexible and cost less money by
9 transferring data and technology needs to the cloud.

10 The specific advantages of cloud for city
11 government are many. First, this technology is
12 designed so that the city pays only when it consumes
13 computing resources. Second, the City can access as
14 much or as little capacity as needed and scale up and
15 down as required with only a few minutes notice.

16 Most notably, the states UI systems legacy
17 infrastructure struggled to handle an unprecedented
18 influx of COVID related jobless claims this spring
19 until they leverage cloud technology to rapidly scale
20 and process unemployment insurance claims at six time
21 the rate and volume of after the 2008 financial
22 crisis.

23 Cloud computing capacity also exists without
24 needing physical space from the user while onsite
25 legacy servers need a climate controlled city office

1
2 all to themselves. The reduced rent and
3 environmental benefits of cloud computing are huge
4 benefits for the city. Meanwhile, cloud technology
5 data storage is also more environmentally sustainable
6 since cloud service companies invest in renewables
7 offsets and greener infrastructure.

8 In terms of resiliency, cloud services let
9 clients recover more easily from unexpected or
10 catastrophic events since they are built to bounce
11 back faster than physically deployed single site data
12 centers or server closets.

13 For example, cloud technology built for the
14 financial services industry ensures they can recover
15 from disasters like massive citywide power outages,
16 100 year storms like Sandy or terrorist attacks.
17 Most importantly, cloud services are more secure than
18 on premise legacy servers. Cloud services have newer
19 security features built in that makes security
20 architecture changes much easier.

21 Physical separation between servers and
22 government offices would also lead to fewer cyber
23 vulnerabilities. Because on premise servers are
24 usually located within or close to city agencies
25

1 themselves, these IT network spaces are at high risk
2 of physical access by unauthorized users.

3
4 Importantly, this superior technology costs less
5 than the legacy servers the city has built and
6 maintains. Our members who provide cloud services
7 report a 31 percent average cost savings to their
8 customer compared to physical on premise services as
9 well as 62 percent more efficient IT infrastructure
10 management.

11 These numbers make sense for the City, especially
12 right now. We recognize that for a government the
13 size of New York's, any change is not an easy task.
14 It is for this reason that Tech:NYC strongly supports
15 Council Member Vallone's bills being discussed today
16 that requires DoITT perform a feasibility study of
17 technology conversion for all city data.

18 We do, however, already believe that the time is
19 now for New York City to begin adopting cloud
20 computing for all city agencies at a much larger
21 scale. Thank you for your time today and I would be
22 happy to take any questions.

23 COMMITTEE COUNSEL: Thank you.

24 CHAIRPERSON HOLDEN: Thank you. Thank you panel.
25 The first panel here. I just have a general

1 question. You know, you heard the Commissioner of
2 DoITT, her testimony. Anything that popped out for
3 any of the panelists that you kind of disagree with
4 that you would like to comment on or that you agree
5 with?
6

7 TRISTAN MOREL L'HORSET: This is Tristan from
8 Accenture. I heard, what I heard is a common north
9 star of a desire to leverage the best capabilities
10 for the city and I think with that in mind, we are
11 generally in alignment. At least our point of view,
12 is that that is the right north star.

13 Understanding the complexities of getting there,
14 establishing that north star is pivotal and that's
15 what I have heard from the testimony.

16 CHAIRPERSON HOLDEN: Great anybody else? Go
17 ahead Ryan, you have something to say.

18 RYAN NAPLES: I think it was really interesting.
19 I think the, you know the Commissioner's support for
20 this technology is really important and I think it is
21 equally important that you know, you all keep pushing
22 because it seems a little unclear just like where the
23 numbers stand and like, how much data actually could
24 be converted to the cloud. Because I feel like that
25 was something that was, you asked probably multiple

1
2 times and it wasn't exactly answered. Because, like,
3 I think the purpose of the bill, right is to kind of
4 understand better what is the universe we are talking
5 about. In order to kind of like, okay, this is
6 really what it looks like, what the reality is and
7 then, now let's take steps to move what can be moved
8 to the cloud.

9 It seems like it is a little bit not totally
10 defined which could be, you know, it could be – there
11 is multiple reasons why that's the case but a bill
12 like Councilman Vallone's I think would be helpful
13 there.

14 CHAIRPERSON HOLDEN: Yeah, it doesn't sound like
15 the Commissioner is really supporting the bill. So,
16 we really, we have to do some convincing but there
17 needs to be like you said, there needs to be some
18 kind of audit and we need more information about
19 these data centers to. We need the cost and so
20 forth, which we didn't get yet and hopefully we will
21 get that from the Commissioner.

22 RYAN NAPLES: Right and I would say also I think
23 what's really interesting to is the piece about how
24 you know, the security piece of not just is you know,
25 the architecture and infrastructure better of cloud

1
2 technology but also just the safety of not having
3 this technology so close to the actual offices
4 because of like unauthorized access.

5 I think that's like another important piece of
6 this.

7 CHAIRPERSON HOLDEN: Can anybody on the panel
8 talk about what city's are doing it right with the
9 cloud? What city's have gone mostly to the cloud and
10 are saving money versus data centers?

11 RYAN NAPLES: I mean, I know California, I
12 believe Los Angeles has a success story in what they
13 are using there. They are using the cloud for their
14 entire city's school district infrastructures now on
15 the cloud in Los Angeles.

16 CHAIRPERSON HOLDEN: We heard good things about
17 that, yes. We did read about that and so, maybe we
18 can learn from them. That's why I always like to
19 look at other city's or countries what they are doing
20 and some of the pitfalls that they have gone through.
21 So, it's a good lesson.

22 Anything else? Okay, we can move on. Thank you
23 panel. Thank you so much for your testimony.

24 COMMITTEE COUNSEL: Right now, I do not see any
25 other questions from other Council Members and we are

1
2 moving to our next panel. And our next panel will be
3 Matthew Cornelius, Professor Steven Bellovin and Omid
4 Ghaffari-Tabrizi. Mr. Cornelius, you can begin when
5 Sergeant at Arms will let you know.

6 SERGEANT AT ARMS: Time starts now.

7 MATTHEW CORNELIUS: Chairman Holden and
8 Distinguished Members of the Committee, thank you for
9 the opportunity to testify today on the benefits of
10 cloud computing and how the New York City Council can
11 leverage cloud and other emerging technologies to
12 dramatically, and securely, modernize legacy systems
13 and better deliver vital services and benefits to
14 your constituents.

15 My name is Matthew Cornelius and I am the
16 Executive Director of the Alliance for Digital
17 Innovation. We are a nonprofit organization, made up
18 of over two dozen of America's most innovative
19 commercial technology companies, which focuses on
20 empowering public sector agencies at all levels of
21 government to better deliver the effective digital
22 experiences that citizens deserve and which taxpayers
23 demand. We believe that the continuing reliance on
24 outdated, insecure legacy technology fundamentally
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2 obstructs the creation of a modern, secure digital
3 government.

4 This hearing is a great opportunity to spotlight
5 this important issue and discuss the opportunities
6 that cloud computing and other new technologies can
7 unleash for the city of New York. Below I will share
8 our perspective on both the IT challenges and
9 opportunities public sector agencies face and will
10 offer some recommendations to improve the speed,
11 scale and likelihood of success in modernizing the
12 City's legacy technology.

13 For starters, cloud-based technologies have a
14 number of unique characteristics that can benefit the
15 City of New York. Including, the ability to buy and
16 leverage IT resources immediately and virtually
17 without limitation. A business model that enables
18 just in time IT deployments, allowing government
19 agencies to consume IT on an as needed basis without
20 having to invest the enormous capital resources
21 necessary to support surge-driven requirements.
22 Enhanced security and privacy, especially regarding
23 the confidentiality, integrity and availability of
24 public data sets and enabling a raft of new
25 capabilities, such as artificial intelligence,

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2 DevOps, and agile development that will streamline
3 and modernize large IT development projects.

4 Up until February of this year, these points,
5 incredibly valid in their own right, were too often
6 just hypotheticals to even the most insightful,
7 forward-leaning public sector leaders. However, the
8 past 10 months of dealing with the COVID-19 pandemic
9 has forced government agencies, at the Federal, state
10 and local levels to accelerate their modernization
11 efforts through the embrace of commercial cloud and
12 other emerging technologies to keep schools
13 functioning, to keep citizens informed, to deliver
14 vital government services and benefits in a new
15 digital-first format. And to ensure the continuity
16 of agency operations during a time of maximum remote
17 telework.

18 Even today, our conversation is made possible by
19 commercial video conferencing equipment, without
20 which this hearing and so many other necessary
21 functions of New York City would be severely
22 truncated or aborted.

23 Other less dramatic but equally important changes
24 in government operations have led cities, states and
25 even entire Federal departments, to leverage cloud

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2 computing to meet their mission. For instance,
3 tightening budgets and cost pressures have pushed
4 numerous agencies to overhaul the antiquated mindset
5 that an organization must own and secure its own data
6 center infrastructure. The pace of innovation in the
7 commercial market, where citizens can handle most of
8 their day-to-day needs from their mobile phone have
9 led them to demand the same quality and ease of
10 service from government programs.

11 And the ever evolving threats to public sector
12 agency IT systems have encouraged government leaders
13 to partner with commercial cloud companies and rely
14 upon the enormous investments in security these firms
15 must make to ensure their customers data and
16 information is appropriately protected from malicious
17 actors. For these reasons and so many more, there is
18 both a common sense and dollars and cents mandate for
19 government agencies to accelerate their adoption of
20 cloud computing and other emerging technologies.

21 ADI commends the Committee on Technology for
22 introducing and considering the Local Law in relation
23 to an assessment of the feasibility of storing city
24 agencies electronic data on cloud computing systems.
25 To help improve the scope and impact of the

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2 assessment, we encourage the Committee to ensure the
3 study includes some additional items that were
4 already well articulated in the draft bill. The
5 potential costs and benefits, including on the city's
6 budget planning and execution of adopting cloud
7 unique consumption-based pricing model. The
8 potential benefits for interagency collaboration,
9 including sharing data and program management across
10 city agencies. The potential benefits of
11 accelerating speed to market and defined service
12 levels, enabling the Department of Information
13 Technology and Telecommunications to dynamically
14 scale quality services up and down based on business
15 demand. The potential benefits to workforce
16 performance and morale through the adoption and use
17 of modern commercial technologies. And the potential
18 benefits to New York City cyber security, posture and
19 readiness.

20 In addition to these particular recommendations,
21 we strongly encourage the Committee to consider
22 further engagement opportunities and original
23 research that can inform their views on cloud
24 computing.

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2 To conclude, IT modernization and leveraging
3 cloud computing are vital not only because it saves
4 money and enhances the effectiveness of agency
5 operations, it is the primary catalyst for increasing
6 public confidence in the ability of government
7 agencies to competently and capably deliver important
8 services to constituents.

9 Thank you very much for the time today and I look
10 forward to continued engagement with the Committee on
11 your important technology efforts as they move
12 forward.

13 COMMITTEE COUNSEL: Thank you very much for your
14 testimony Mr. Cornelius. And our next panelist is
15 Professor Bellovin. Professor Bellovin, you may
16 begin when the Sergeant At Arms will let you know.

17 SERGEANT AT ARMS: Time starts now.

18 STEVEN M. BELLOVIN: Thank you. Thank you Chair
19 Holden for having me speak here. I am a Professor of
20 Computer Science at Columbia University affiliate Law
21 Faculty, although I stress I am speaking only for
22 myself.

23 For more than 30 years, security and privacy have
24 been my major research and professional interests,
25 both at the university and before that I was at AT&T

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2 Labs and Bell Labs Research. And we are speaking
3 mostly about the technology. I was delighted to hear
4 from Commissioner Tish that the City is moving
5 towards cloud technology.

6 I want to distinguish between three different
7 aspects. This cloud computing, we basically are just
8 renting computer cycle, CPU cycles for our provider.
9 Cloud storage, we are renting disk space and cloud
10 applications, which are the enhanced services that
11 all the cloud providers offer. Cloud storage and
12 cloud computing are difficult to disentangle. If you
13 only store your data in the cloud, you are going to
14 slow down some applications because of the speed of
15 light is too slow to retrieve data rapidly to a
16 computer in the city for a data center that might be
17 say, Northern Virginia where AWS has one of its large
18 data centers.

19 So, you really need to group them together.
20 There is also the charges for network traffic outside
21 of their premises which can also be considerable.
22 But cloud applications that make life really, really
23 interesting. The enhanced services available by all
24 cloud providers. For example, artificial
25 intelligence platforms, facial recognition,

1 databases. Far more, stuff that's possible with
2 difficult to replicate on your own, even for
3 organizations large as New York City, even for just
4 one IT operation, rather than many different
5 agencies.
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7 Now when it comes to security, if you are only
8 getting CPU cycles, you get only minor security
9 advantages. You could do things on a more agile
10 fashion but basically, you are still running the same
11 computers. If you take an application, do what is
12 called lift and shift. Just move it to cloud
13 computers, you are going to save little if any money
14 and little of any improvement in security.

15 But when you start using these cloud native
16 applications, these enhanced applications, you are
17 getting tremendous benefits of the economy of scale
18 that the big cloud providers can offer. They know
19 how to run machines at scale at essentially zero
20 marginal cost for each additional computer. Because
21 that's their business is doing their scale. They are
22 also about the best in the business at security.

23 When they are securing their applications, they
24 are doing it better than more or less anybody else
25 can. That is their business. You get a considerable

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2 increase in security by using their services. Yeah,
3 there is in some sense some risk of outage but you
4 are also really good at reliability. That is again
5 their business. You could get outages with your own
6 services. Early 1999, there was a failure of the
7 city's 911 system. A combination of a hardware
8 failure and in design of how to do a test. Testing a
9 generator while the battery backup was offline.

10 In 2011, the 911 system in the city was
11 overloaded following a large storm. You need more
12 reliability and you can get this through cloud
13 services. Quite a part from the agility of being
14 able to spin up more services when you need them,
15 which has been mentioned by others.

16 So, I am very much a fan of moving stuff through
17 the cloud but it does have to be done carefully.
18 Lift and shift is not going to save anybody by any
19 noticeable amount of money. I would suggest doing
20 trial migrations of existing applications, not just
21 migrating them to a cloud server but rearchitecting
22 them. Learn what it is going to cost. It will not
23 be free. It may not even be cheap but let's learn.
24 It is a direction we need to be going but it does
25 need to be done in a cloud native fashion.

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2 And I think it will be useful to do. Given the
3 changes necessary to do its operations, it might also
4 be wise to have external advisors. People from some
5 of the large companies in the city that are customers
6 that allow providers aiding in the evaluation of this
7 transition.

8 Again, I am happy to answer any further questions
9 and I thank you for having me.

10 COMMITTEE COUNSEL: Thank you Professor for your
11 testimony. Our next panelist is Omid Ghaffari-
12 Tabrizi.

13 Mr. Ghaffari-Tabrizi, you may begin when Sergeant
14 at Arms will let you know.

15 SERGEANT AT ARMS: Time starts now.

16 OMID GHAFFARI-TABRIZI: Thank you to Chairman
17 Holden, the Honorable members of the Committee on
18 Technology, and the IT support staff of the New York
19 City Council for allowing me to participate in this
20 hearing via a cloud-based video conference tool.

21 My name is Omid Ghaffari-Tabrizi and I am
22 Internet Association's Director of Cloud Policy. IA
23 represents over 40 of the world's leading internet
24 companies and supports policies that promote and
25 enable a free and open internet. Our companies are

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2 also global leaders in the drive to develop lower
3 cost, more secure, scalable, elastic, efficient,
4 resilient and innovative cloud services for users and
5 customers in the private and public sectors.

6 In fact, all the major U.S. based hyperscale
7 cloud computing service providers are IA members.
8 Commercial cloud adoption is a necessary component of
9 any modernization effort. It provides enhanced
10 security, it helps reduce procurement costs and it
11 helps improve the effectiveness and most importantly,
12 morale of the workforce. IA members know this
13 because, in their collective experience with
14 governments of all sizes, they have been responsible
15 for maintaining and securing data of all types and
16 levels of sensitivity, from publicly available data
17 sets to the most sensitive national security
18 intelligence artifacts.

19 All of our members invest a tremendous amount of
20 energy, effort and expense in security and
21 compliance. Adopting commercial cloud-based
22 computing would allow the City to take advantage of
23 this investment for themselves. Most relevant to the
24 City is the way in which commercial cloud-based
25 computing service providers have invested in physical

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2 and cyber security. In terms of physical security,
3 the buildings where our members have the computing
4 devices they use to store public sector data are, if
5 you will allow the expression, more secure than Fort
6 Knox.

7 IA members have data centers that use the most
8 advanced biometric technology simply to grant entry
9 into a facility and this is only after passing some
10 of the most rigorous of background checks. For those
11 moments outside of the control of people, these data
12 centers are also designed to withstand the most
13 severe weather and most intense natural disasters.

14 If you were able to enter into one of these data
15 centers and see under the hood at how the computers
16 themselves operate, you would find tools using
17 emerging technologies, such as artificial
18 intelligence and machine learning, to provide both
19 offensive and defensive cyber security resilience.
20 Spotting abnormalities in network activity or
21 providing the ability to immediately load backups
22 should the worst occur will ensure that users of
23 cloud computing services will experience
24 uninterrupted delivery of essential services.

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2 Confidentiality, integrity and the availability
3 of data is what makes for a secure cloud and is one
4 of the key benefits of commercial cloud service
5 providers. One of the other benefits of commercial
6 cloud computing is that it enables on demand access
7 to shared computing resources. As I alluded to at
8 the very beginning when I pointed out the fact that
9 my participation in this hearing is made possible as
10 a result of a cloud-based video conferencing tool, we
11 are using an application that uses only the computing
12 resources necessary to support the audience present.

13 If we were using a video conferencing tool that
14 was hosted on city-owned computing devices, the
15 number of computers that the City would have to own
16 and maintain would have to be equal to the number
17 necessary to support the maximum participants the
18 City expects. This means every single Committee
19 hearing where no one shows up, would cost the City
20 just as much as a hearing where 10,000 people show
21 up, because that is the maximum number of
22 participants the city-owned data center in our
23 hypothetical example was designed to support.

24 Expanding on that idea, everyone knows that
25 certain City services will always experience ebbs and

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2 flows. Schools.nyc.gov, for example, will require a
3 lot more computing power to support parents, students
4 and teachers looking for information when schools
5 reopen in the middle of the summer. If the
6 Department of Education hosts applications on City-
7 owned computing devices, the programs using those
8 applications will have to find a budget to pay for
9 their upkeep year round, whether there are thousands
10 of visitors or just one. Using commercial cloud-
11 based solutions, on the other hand, would allow the
12 City to adopt a pay as you go form of IT budgeting,
13 ensuring that the only computing services being paid
14 for and maintained are those the City is actually
15 using.

16 Another benefit of using consumption-based cloud
17 computing services is that it allows City employees
18 and the contractors who work with them to quickly
19 develop a proof of concept or prototype for internal
20 and public facing applications and when they are
21 found to be successful, quickly scale them for use.
22 By providing access to advanced capabilities that are
23 constantly being updated or rolled out by commercial
24 cloud service providers, paper-based forms and

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2 processes can be converted to digital ones and the
3 data collected can be used to make better decisions.

4 For example, an employee can quickly deploy a
5 robotic process automation bot using a no code or low
6 code tool, meaning they simply write out instructions
7 with no need for programming knowledge to process
8 applications for benefits. If an application for
9 housing in a homeless shelter during the winter
10 months or one for legal assistance in the event of an
11 eviction is currently paper-based or depending on
12 applications running on antiquated hardware, there is
13 a very real chance that additional services that
14 would benefit this particular resident were unaware
15 that that person qualified. This is a situation that
16 never has to happen again if cloud-based, cloud
17 native data-driven decision making is enabled.

18 To that point, a team operating one of the more
19 heavily trafficked local call centers can take all
20 the questions and answers and put them in an AI chat
21 bot that will allow for mobile friendly delivery of
22 personalized customer service at any hour of the day,
23 any day of the week.

24 SERGEANT AT ARMS: Time.

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2 OMID GHAFARI-TABRIZI: Thank you again for your
3 time and I look forward to following up with you if
4 this bill progresses especially with the amendments
5 that we proposed.

6 COMMITTEE COUNSEL: Thank you very much for your
7 testimony. I now turn over to the Chair for
8 questions.

9 CHAIRPERSON HOLDEN: Thank you all for your great
10 testimony. Very enlightening. I will ask the same
11 question I asked the previous panel. Did you get a
12 sense from the Commissioner's testimony that we are
13 headed in the right direction?

14 STEVEN M. BELLOVIN: I was glad to hear that the
15 city is moving to cloud applications, especially for
16 anything newer. You know, I think that we need to
17 look more closely at how much more we can move to the
18 cloud and how rapidly and I did not foresee that that
19 was being done that rapidly but you know, I don't
20 have direct feasibility into the operations of DoITT.

21 I am glad that they are moving in that direction.
22 I would like them to move faster.

23 OMID GHAFARI-TABRIZI: I would agree that the
24 general tone was positive and that there was a
25 general agreement with the idea of adopting cloud

1 based services to be something positive and
2 beneficial but as I think, as we indicated in some of
3 the red lines that we submitted with our testimony,
4 there was a little bit of potential opportunity for
5 actually analyzing the return that would come from
6 using these cloud native applications. There is
7 absolutely an investment required to migrate to the
8 cloud but once you have actually moved your services
9 into those cloud native applications, as the
10 Professor was mentioning rather than a lift and
11 shift, there are some benefits that you simply wont
12 be able to get from a non-premise solution.
13

14 CHAIRPERSON HOLDEN: Right. How is New York City
15 doing relative to other cities? Does anybody have
16 something to offer there?

17 OMID GHAFARI-TABRIZI: I would say this much.
18 It is very positive that you at least are considering
19 and bill like this. There are very many examples of
20 large cities that could use something like this. So,
21 if nothing else, it is very positive that at least
22 you have more than just your department of IT and you
23 have more than just your Department of IT and some of
24 the technical focused folks looking at this issue.
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2 CHAIRPERSON HOLDEN: But we are going to share
3 because we didn't get some of the answers on the cost
4 of these data center, New York City data centers,
5 which I think is a very, very important discussion.

6 Obviously with the budget, you know the serious
7 budget situation where we are in in New York City,
8 that we need to get those numbers. So, once, we will
9 put it on our social media in the Council. We have a
10 technology page that will update you - everyone here
11 because it is a very important discussion and we need
12 some kind of schedule to how the city is going to
13 save money going forward with the cloud versus the
14 data centers and you know, are we, you know, we
15 should actually do a - we talked about an audit
16 today.

17 There has got to be a serious audit of these city
18 agencies and how they are doing business and what
19 they could do better but you know, I am holding your
20 testimony here and I really, I am just reading it as
21 I am talking to you. It is very interesting; we need
22 to consult with you in the future. I think the
23 Committee will be contacting you all because your
24 wonderful testimony. Thank you Professor to for your
25 testimony and suggestions. This is a tremendous

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2 service you have done for New York City and being on
3 this hearing. Thank you so much.

4 COMMITTEE COUNSEL: Thank you. I do not see any
5 other Council Members wishing to ask questions. I
6 want to thank you all for your testimony. Chair, do
7 you have any final questions to the panel?

8 CHAIRPERSON HOLDEN: Okay, well, no questions.
9 Thank you. Thank you everyone who testified and gave
10 testimony and I want to thank the staff from the
11 Speakers office who organized the hearing and thank
12 you Sergeant at Arms for their work in ensuring a
13 smooth hearing and again, I want to thank the
14 Committee Staff. Irene, I want to thank you
15 personally Byhovsky, who did a tremendous amount of
16 work on this. Charles and Florentine, thank you so
17 much. Thank you all and thanks to my staff.

18 Thanks everybody who testified and we are -

19 COMMITTEE COUNSEL: Just before we close, I
20 apologize, just before we close, I want to make sure
21 that we haven't missed anyone and if there is any
22 witnesses that registered to testify today and has
23 yet to be called, please use your Zoom raised hand
24 function and I will call on you. As of right now, I
25

1
2 do not see anyone and I just want to thank you all
3 for your testimony and turn back to the Chair.

4 CHAIRPERSON HOLDEN: Thank you Irene. So, seeing
5 no questions, again, I just want to say thank you
6 everyone and happy holidays. This hearing is closed.

7 [GAVEL]

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C E R T I F I C A T E

World Wide Dictation certifies that the foregoing transcript is a true and accurate record of the proceedings. We further certify that there is no relation to any of the parties to this action by blood or marriage, and that there is interest in the outcome of this matter.



Date January 15, 2021