

**North American Numbering Council
Meeting Transcript
September 15, 2016 (Final)**

I. Time and Place of Meeting. The North American Numbering Council (NANC) held a meeting commencing at 10:00 a.m., at the Federal Communications Commission, 445 12th Street, S.W., Room TW-C305, Washington, D. C. 20554.

II. List of Attendees.

Voting Council Members:

- | | |
|-----------------------------|----------------------------------|
| 1. Hon. Chairman Kane | NANC Chairman (NARUC – DC) |
| 2. Eric Chuss | ATL Communications |
| 3. Mark Lancaster | AT&T Inc. |
| 4. Mary Retka | CenturyLink |
| 5. Betty Sanders | Charter Communications |
| 6. Valerie R. Cardwell | Comcast Corporation |
| 7. Courtney Neville | Competitive Carriers Association |
| 8. Beth Carnes/Sandra Jones | Cox Communications |
| 9. Matthew Gerst | CTIA |
| 10. David K. Greenhaus | 800 Response Info Serv, LLC |
| 11. Christopher Shipley | INCOMPAS |
| 12. Cary Hinton | NARUC, DC |
| 13. Carolee Hall | NARUC, Idaho |
| 14. Hon. Lynn Slaby | NARUC, Ohio |
| 15. Hon. Karen C. Peterson | NARUC, Massachusetts |
| 16. Hon. Crystal Rhoades | NARUC, Nebraska |
| 17. Jerome Candelaria | NCTA |
| 18. Brian Ford | NTCA |
| 19. Richard Shockey | SIP Forum |
| 20. Rosemary Leist | Sprint |
| 21. Michele Thomas | T-Mobile |
| 22. Thomas Soroka, Jr. | USTA |
| 23. Ann Berkowitz | Verizon |
| 24. Brendan Kasper | Vonage |
| 25. Dawn Lawrence | XO Communications |

Special Members (Non-voting):

- | | |
|--------------|-------|
| John Manning | NANPA |
| Amy Putnam | PA |
| Jackie Voss | ATIS |

Commission Employees:

Marilyn Jones, Designated Federal Officer (DFO)
Kris Monteith, Wireline Competition Bureau
Ann Stevens, Competition Policy Division, Wireline Competition Bureau
Sanford Williams, Competition Policy Division, Wireline Competition Bureau
Carmell Weathers, Competition Policy Division, Wireline Competition Bureau

III. Estimate of Public Attendance. Approximately 20 members of the public attended the meeting as observers.

IV. Documents Introduced.

- (1) Agenda
- (2) NANC Meeting Transcript – September 15, 2016
- (3) North American Numbering Plan Administration (NANPA) Report to the NANC
- (4) National Thousands Block Pooling Administrator (PA) Report to the NANC
- (5) Numbering Oversight Working Group (NOWG) Report
- (6) Report of the Toll Free Number Administrator (TFNA)
- (7) North American Numbering Plan Billing and Collection (NANP B&C) Agent Report
- (8) Billing and Collection Working Group (B&C WG) Report to the NANC
- (9) North American Portability Management (NAPM LLC) Report to the NANC
- (10) LNPA Transition Oversight Manager (TOM)
- (11) Local Number Portability Administration Working Group (LNPA WG)
- (12) Future of Numbering (FoN) Working Group Report to the NANC
- (13) Status of the Industry Numbering Committee (INC) activities
- (14) Robocall Spoofing Strike Force

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VI. Summary of the Meeting

Marilyn Jones: Good morning everyone. I've just been informed that Chair Kane is running late, so we're going to get started without her. Let's start with the introductions. We'll start at the table, and then take the folks on the phone. Mary?

Mary Retka: Mary Retka, CenturyLink.

Valerie R. Cardwell: Valerie Cardwell, Comcast.

Courtney Neville: Courtney Neville, Competitive Carriers Association.

Beth Carnes: Beth Carnes, Cox Communications.

Matthew Gerst: Matt Gerst with CTIA.

David K. Greenhaus: David Greenhaus with 800 Response Information Services.

Christopher Shipley: Christopher Shipley with INCOMPAS.

Carolee Hall: Carolee Hall, Idaho PUC Staff.

Karen Charles Peterson: Karen Charles Peterson, Massachusetts.

Crystal Rhoades: Crystal Rhoades, Nebraska.

Jerome Fitch Candelaria: Jerome Candelaria, NCTA.

Brian Ford: Brian Ford, NTCA.

Richard Shockey: Rick Shockey, SIP Forum.

Rosemary Leist: Rosemary Leist, Sprint.

Thomas Soroka: Tom Soroka, US Telecom.

Ann Berkowitz: Ann Berkowitz, Verizon.

Brendan Kasper: Brendan Kasper, Vonage.

Dawn Lawrence: Dawn Lawrence, XO.

Marilyn Jones: Marilyn Jones, FCC. Okay. Who do we have on the phone?

Betty Sanders: Betty Sanders from Charter.

Male/Female Voices: [Cross-talking]

Lynn Slaby: Commissioner Lynn Slaby, Ohio.

Amy Johnson: Amy Johnson, Department of Commerce.

LJ Freeman: LJ Freeman with Bandwidth.

Linda Hyman: Linda Hyman with Neustar Pooling.

Pete: Pete Yonders [phonetic], Constant PFC [phonetic].

Eric Chess: Eric Chess [phonetic], ATL Communications.

Male Voice: Pennsylvania Public Utility Commission.

Rebecca Beaton: Rebecca Beaton, Washington State Utilities and Transportation Commission.

Steven Hayes: Steven Hayes, Oregon Public Utility Commission.

Michele Tomas: Michele Tomas, T-Mobile.

Lavros Giladis: Lavros Giladis [phonetic], Pennsylvania Public Utility Commission.

Mark Lancaster: Mark Lancaster, AT&T.

Jennifer Penn: Jennifer Penn, T-Mobile.

Marilyn Jones: Thanks everyone for the introductions. I would like to welcome everyone to the Thursday, September 15, 2016 NANC Meeting. We're in the commission room, and it's 10:10.

Announcements or Recent News

I don't have any announcement or recent news to offer. Does anyone else?

Approval of the Transcript

Hearing none, let's move to the transcripts. Did anyone have any updates to the transcripts that Carmell did not receive? Mary? Rosemary?

Rosemary Leist: This is Rosemary Leist with Sprint. Well, we just got those this morning, so I haven't looked at them yet.

Unless they came in before this morning and I did not see them, which is entirely possible. They did? Okay. Strike that.

Marilyn Jones: The ones that went out this morning are the ones that we want to approve for the agenda this morning. So those are the ones that have all the edits that Carmell has received. Right, Carmell?

Carmell Weathers: Yes.

Rosemary Leist: That's fine. Thank you.

Marilyn Jones: Did anybody have any further edits to the transcripts? Okay. Does anybody have an objection to approving the transcripts for inclusion into the record? Okay. So Carmell, we will include those transcripts into the records. Let's get started with the reports. Oh, before we start with the reports, let's number the documents. Document number 1 will be the agenda. Document number 2 will be the approved transcripts.

North American Numbering Plan Administration (NANPA) Report to the NANC

The first report is from the North American Numbering Plan Administrator. It would be presented by John Manning, the director.

John Manning: Thank you, Marilyn. Good morning everybody. This morning I'd like to give you an update on all of the

numbering resources that we administer. A typical update on area code relief planning, I want to talk about a few change orders that had been recently submitted and so now they're NANPA or NANP-related news.

Starting with the NANP resources, let's first begin with the area codes. Since our last meeting back in June, two area codes have been assigned. One was the 726. That is in relief of the Area Code 210 in the San Antonio Texas area. We've also assigned another non-geographic NPA 522 to relieve the 588 area code that took place on August the 1st. Since our last meeting, two area codes have gone into service. The New York 680 for the area code 315 went into service in July, and I just mentioned the non-geographic NPA 522 also went into service at the beginning of August. For the remainder of this year, there's one area code yet to be implemented, that's in Indiana, the 463 that will relieve the 317. This is in the Indianapolis, Indiana area. That'll take place in November 15.

Regarding CO code activity, the chart in the middle of the page reflects CO code activity between January 1st and August 31. A couple of observations, as you look at that chart, first of all you're looking at January through August of 2016. It's very similar to what we've experienced in 2015 during the same time period both in terms of the quantity of assignments, as well as the quantity of returns. Annualizing the 2016 data

indicates that we'll assign somewhere between 3600 and 3700 central office codes which is basically in the same area as what we did in 2015.

Moving on to some other resources we administer, the Feature Group B, as in Bravo, Carrier Identification Codes, we have made zero assignments of those codes in 2016 and four codes have been returned since the start of the year. For Feature Group D, as in Delta, Carrier Identification Codes, NANPA's assigned 14 of these Carrier Identification Codes. A total of 17 codes have been returned or reclaimed. And as of the end of August, you can see we have a little less than 2,000 assigned with a little over 7800 available for assignment.

With the non-geographic 5XX NPA resource, we've assigned 642 codes so far this year and 15 codes have been returned or reclaimed. As of the end of August over 4,800 codes are assigned, and we have 711 available for assignment. The 900 area code, no new assignments in 2016, so far five codes have been returned. And you'll at the end of August there are 55 assigned 900 NXX codes.

For the 555 line number resource, I remind the NANC that there is a moratorium in place. So there had been no 555 line number assignments. To date, to August of this year we have recovered a total of 2850 numbers and 56 line numbers were

assigned. Those assignments had been forwarded to the FCC for potential action on reclamation of those resources.

For the 855 resource, there's been no activity, no assignments, and no returns. For the NPA 456 used for inbound international services, no new 456 NXX codes have been assigned this year. One code has been returned. So as of August 31 there are just two 456 NXX codes assigned and NANPA is reaching out to the entity to which those codes are assigned to determine if they still need those codes. If that's no longer the case, ultimately we might be able to get this resource with no assignments. If that is the case, it's potentially that this particular resource could be reclaimed and use for other purposes.

For Vertical Service Codes, ANI information digits and N11 codes, there has been no activity in 2016. I'll pause there. Are there any questions on the resource update? Okay.

On page 4, I'll turn our attention to area code relief planning. There have been a number of things that have taken place since our last meeting. I'm going to focus primarily on those items and just touch briefly on the items that are currently ongoing that there really are no changes, the first of which is in the Area Code 317. Now this is going to be an all-services overlay. It's going to go into service in November of 2015.

Previously, this particular area code was to be in service in October. But due to a request for some additional time to implement the 10-digit mandatory dialing, the schedule slid back basically one month. Now that permissive dialing was already in place, the mandatory 10-digit dialing is now taking place on October the 15th and the new in-service date to be in November 2016.

For 315 area code in New York, as I mentioned, the in-service date for this particular area code is March of 2017. There is no update or changes with regard to that implementation. The same is also true for the New York 212, 646, 917, and the 332 area code being added to that complex.

Update on Area Code 323 in California, on July 14 the California Public Utilities Commission approved a boundary elimination overlay as a relief method for 323. So 1 plus 10-digit dialing is now scheduled to begin in January of 2017 and mandatory dialing in July. The effective date of this boundary elimination will be on August of 2017.

For Washington 360, there's really no update. Scheduled implementation has the in-service date for the new 564 in August of 2017. Also there's no update on Idaho, scheduled implementation of in-service date for 986 still in September of 2017. And I mentioned earlier the assignment of an area code to relieve the Texas 210. That was the 726. Permissive dialing

will begin in March of 2017, mandatory dialing in September, and the in-service date of October of 2017.

Now, proceeding on to some of these other projects that are ongoing, in New York 518, NANPA submitted a relief petition on behalf of the industry recommending an all-services overlay of the 518 area code. On August 30 we published a revised 518 exhaust projection. The new forecast and exhaust date is now third quarter of 2017. Based upon this revised forecast, NANPA declared the 518 area code in jeopardy. And just as a reminder to the group, jeopardy occurs or an NPA jeopardy condition exists when the forecast and/or actual demand of NXX resources will exceed the known supply during the planning or implementation for relief.

In this particular instance, the New York Commission will be addressing 518 relief at their upcoming meeting, which I understood takes place today. We're hopeful we'll get an order out of them to go ahead and move forward with the implementation. Until then, the industry will be meeting on September 20 to address the situation and to devise or implement final jeopardy procedures.

For California 805 and 916, they had public and local jurisdiction meetings taking place in August. Just as a follow up, since those meetings have occurred, NANPA's now awaiting CPUCs report from those public meetings and the industry will

review that report and draft an application for relief expected sometime this fall.

For California 619, we conducted a relief planning and meeting in January. The recommendation proposes that 619 and 858 area codes collectively serve the same geographic area currently served separately by the two area codes. Public and jurisdiction meetings are planned for October of this year.

For Area Code 510, we filed a relief plan for the 510 on June the 20. This year has reached agreement for recommended all-services overlay in public and local jurisdiction. Meetings are planned for January and February of next year.

In Pennsylvania, two area codes to refer to here, first of all, in Pennsylvania 717, NANPA filed a petition for relief on behalf of the industry back in October of last year and had recommended an all-services overlay of the 717. Public meetings took place on August the 9th. What is not included in my report here because it just recently happened, NANPA published a revised forecast for the 717 area code to third quarter of 2017. Previously, the forecast was second quarter 2018. As a result of this revised forecast, NANPA declared the 717 area code in jeopardy. And similar to the 518 area code, a meeting will take place on September 29 to address this jeopardy situation and come up with final jeopardy procedures.

In Pennsylvania 215 and 267, on August 5th NANPA filed a petition on behalf of the industry to add a new area code to this area code complex. Also in September 9th NANPA revised the forecast for this particular complex from second quarter 2019 to second quarter 2018.

Finally, as I mentioned earlier, on August 2nd we published the planning letter 493 that announces supply of the 500, 533, and 544, et cetera, NPAs were exhausting. In such, we initiated the assignment of 522 NXX codes. Let me pause there and see if there are any questions concerning area code relief. Very well.

NANPA Change Orders, there are three change orders that I'll address this morning. First of all is NANPA Change Order 3 referred to as NAS NRUF updates, NRUF being Number Resource Utilization and Forecasting. On August the 18th the FCC approved this change order. This provides modifications to account for the FCC's report and order concerning direct access to numbers for interconnected Voice over Internet protocol, VoIP, providers.

In this particular change orders, there are changes to the NRUF Form 502 to allow interconnected VoIP providers to be able to identify themselves as a particular service type. In addition, there are some changes to the form to include the Edition date rather than a Version date. Also, along with this, we will be revising the Form 502 and it will only be available

in an .xlsm format. No longer will we accept the old .xls format. These changes are planned for implementation in the October time frame. Specifically, we are looking at a date of October 24, 2016. The new form, the new form in its -- or I should say updated. The form is not new. It is updated to, in fact, the June 2016 version date. It was posted to the NANPA website on September 12, and the notice was sent to the industry about this upcoming change just yesterday on the 14th.

The second change order, Change Order 5, deals with the INC issue 788. This is 555 line number assignments in reclamation. On August 27 NANPA submitted that change order in response to this INC issue to sunset the 555 NXX Assignment Guidelines. This change order proposes modifications to the NANPA Administration System that include the removal of the 5XX NXX Part A Application Form, the 555 NXX Part C In-Service Confirmation Form, and the real-time 555 NXX assignment report are available on the public website. This change order is still pending with the FCC.

Finally, NANPA Change Order 6, this is NAS to the Cloud. On September 2, 2016 NANPA submitted a change order and this change order proposes the NANP Administration System moved to the Amazon Web Services Cloud similar to the Routing Number Administration System, RNAS, and the Pooling Administration System. Just for your information, I note here RNAS migrated in

March and PAS migrated to the Cloud in June of this year. And both of those systems have been working just fine. So what we propose is to now move the third of the FCC systems into the Cloud, looking to complete that movement or migration in the late first quarter or early second quarter timeframe of next year.

Any questions regarding the three NANPA change orders that I covered? Okay. Finally, under *NANPA News*, our newsletter which comes out every quarter will be published at the beginning of October. We will have the October 2016 NPA and NANP Exhaust projections, as well as the 5XX NPA Exhaust projections available by the end of October. Those will be posted to our website and appropriate notification sent to the industry.

Also, I just wanted to highlight for the NANC some additional steps we've been taking since the beginning of this year as it is recognized by our interconnected VoIP providers to have direct access to numbering. We here at NANPA have been focusing on ensuring that they understand, specific to NANPA, there are NRUF requirements, the idea that you must file utilization and forecast reporting on a semi-annual basis, as well as the need to have a forecast on file whenever requesting resources in a particular area code and rate center.

To that end, I wanted to note some of the things that we have been doing. First of all, and this has been noted

previously to the NANC, we have an information page. It's called Getting Started for Interconnected VoIP Providers on the NANPA public website, and this information is also available on the pooling website. That outlines specific items pertaining to the interconnected VoIP provider's direct access to numbers. We here at NANPA have augmented the one on our website to talk a little bit more also about their NRUF requirements. During the last submission cycle, we distributed numerous notifications about the NRUF submission cycle - including NRUF tip of the day - to bring attention to the NRUF reporting requirement, as well as to assist interconnected VoIP providers as well as other service providers in general for completing their NRUF submission. The point being even though some of these organizations are just applying or just received their authorization, they will quickly be getting themselves wrapped up and they need to meet that NRUF requirement for submitting any reapplications for resources.

Third, we have been offering one-on-one NRUF training to those entities with approved interconnected VoIP numbering authorization applications. Now the report here says we've to date conducted two training sessions with two different providers. The update to that, we've now updated five. We've had training sessions with five of those providers now, five of the seven approved, and the feedback has been that it's been

very, very helpful. The one-on-one sessions allow us to talk specific to that particular interconnected VoIP provider's needs rather than having to be a little more general in some of the other training sessions that we have conducted.

Finally, we've simplified access to the NRUF information on the NANPA website with a dedicated link right from the homepage toolbar so that you have access to various documents, forms, and other information concerning the NRUF reporting process. This provides a consolidated area where one can go to and get the information. But also we're doing this in conjunction with the implementation of Change Order 3, so it's another way or another vehicle to convey the changes that are upcoming with the upcoming June 2016 NRUF Form.

The final page in my report of those area codes exhaust in the next 36 months, please let me note also that this report is/was as of 09/06, September 6. Subsequent to that, we've had some revisions made to some of the area codes here in terms of their exhaust forecasts that are not reflected on this report but certainly reflected on our current public website.

Any questions? Excellent. Thank you.

Marilyn Jones: Thank you, John.

Report of the National Thousands Block Pooling Administrator

(PA)

Our next report is from the national thousands-block number pooling administrator, and it would be presented by Amy Putnam. It will be Report Number 4.

Amy Putnam: As you all know, Pooling is fine. I couldn't start without saying that.

Male Voice: You're different.

Amy Putnam: Yeah. If I started without saying that, you immediately think something was awful.

All right, our first chart shows the PA Summary Data, our activity for the last 12 months. Our total through August was 72,161 blocks for this year, which is 30,000 fewer than last year at this time. You may remember that last year was a record year. The year before was a record year. We've had a series of record years, and now we seem to be plateauing here. Or to put it in a different way, come on you guys, get busy. We actually are on target with the year 2011, as if it is a target

Next chart is p-ANI Summary Data. There's nothing particularly unusual there. The past Part 3 summary data are the same. NXX codes opened. Useful information, summary of rate center changes, there is nothing out of the ordinary there, or in our reclamation summary. With respect to past

performance, we keep a running yearly total as we do with all the others. Our overall past performance at this time is 99.99 percent for the last 12 months. RNAS on the other hand, as you will notice, has all zeroes in the instances of unscheduled unavailability. RNAS had 12 consecutive months with 100 percent availability.

With respect to compliance, we've filed all our contractually required reports for August 2015 through August 2016, and they're posted on the website. For p-ANI Administration, we continued working on reconciling existing data discrepancies. We have that on here all the time. But just this week, for example, we got notifications about calls that were being misdirected and we worked with the VPCs and the carriers involved to get numbers that were misloaded straightened out in the system. It's not just from reports. It's sometimes an on-the-spot issue and we have to work with the parties involved to get things corrected.

NOWG, we participated in the regular monthly meetings in July and August. The September meeting is later this month.

Change Order 3. There's no change from my last report. It was approved by the Change Order 3A. Actually, it was approved by the FCC on August 1st with a delivery date on or before October 1st. We've also been working with the transition oversight manager with respect to Change Order 3B1. Initially,

when we were approached about breaking Change Order 3 up, we imagined the 3A and 3B. Now we're looking at 3B1 and maybe 3B2, and that's as far as I want to look. The 3B1 addresses the development in internal testing of the API and the past code changes required for PAS to support both NPAC vendors. That is something that we are working on internally at this time and preparing it for submission.

VoIP orders, the VoIP order is keeping us busy. We do have information posted on our website on the documents that the VoIP service providers are required to produce in order to obtain numbers so that they know exactly what they need. Once they have produced the documentation that's specific to VoIP, the process is the same for them as it is for other service providers. We have had how-to videos on the website. We changed the names on some of them so that they know that in fact they are for not just wireline and wireless but also for VoIP service providers. And we continue to field calls with questions.

Six VoIP service providers have obtained their national authority from the FCC. Eight applications are at various stages of the pre-authorization process. We continue to work with individual VoIP service providers and states on any questions they have regarding application processing, proper supporting documentation, and the information contained in the

30-day notice. We continue to send regular updates to the state commissions whenever new applications or filings are made, and we continue to work with the states on whether the INC 30-day notification form is sufficient for that state or if the state commission has its own process. Several states have state specific processes. Some of those processes relate to all carriers, and some are related to the 30-day notice.

Finally, we continue with the old overdue Part 4 project which crops up periodically. These go back to 2012 and we're continuing to work with the states to try and clean those out of our system. Questions? I'm sorry I didn't take as long as John, but that's my report. Thank you.

Report of the Numbering Oversight Working Group (NOWG)

Betty Ann Kane: Thank you, Amy. Good morning. I apologize for lateness. It was one of those difficult mornings. The next item is the report of the Numbering Oversight Working Group, the NOWG. Your report will be item Number 5 for the record.

Laura Dalton: Good morning. I'm Laura Dalton from Verizon. I'm one of the co-chairs of the Numbering Oversight Working Group, which is the NOWG, along with Karen Riepenkroger from Sprint.

Slide 2 lists the contents of our report. The topics that I'll be discussing on the following slides are the NOWG's recent activities, followed by a brief summary of the NANPA and the PA Change Orders, and the last few slides contain the schedule of our upcoming meetings and the list of NOWG participants.

Turning to slide 3, NOWG Activities, in carrying out our role of overseeing the operations and evaluating the performance of the NANPA and the PA, the NOWG holds separate monthly conference calls with the NANPA and the PA to review their activities. We also hold NOWG-only calls immediately following the NANPA and PA calls to discuss any issues that may require follow up. In addition to the monthly calls, we hold special NOWG-only meetings if needed. Recently, we have begun meeting to review and update the Technical Requirements Documents, the TRDs, of the NANPA and the PA. It has been several years since the TRDs had been updated - 2012 for the NANPA TRD, and 2013 for the PA TRD. Since the NANPA and the PA contracts with the FCC are due to expire in July of 2017, we're updating the TRDs now so that they're ready to be issued along with the RFPs for the new contracts.

Another activity which the NOWG usually undertakes at this time of year is to prepare for the annual performance surveys. We look at the survey questions and format and we decide if anything needs to be changed. We also give the NANPA and the PA

the opportunity to let us know if they feel any modifications to the survey are needed.

So moving on to slides 4 and 5, the charts on these slides show the NANPA and PA Change Orders that are currently outstanding. Since John and Amy have already reported on them in detail, I'll just briefly address them here. The NOWG reviews each change order submitted by the NANPA and the PA and issues an NOWG Change Order Recommendation. Looking at the chart for NANPA, Change Order 3 pertains to updates being made in NAS to the NRUF Form 502, NRUF Processing and Reports as a result of changes needed to accommodate VoIP providers obtaining direct access to numbering resources. This change order was approved and scheduled for implementation next month.

NANPA Change Order 5 was submitted in August and is still pending FCC approval. It proposes modifications to NAS to implement changes being made to the use and management of the 555 Line Numbers to support the sunset of the INC's 555 Line number assignment guidelines.

Finally, NANPA Change Order 6 is the most recent NANPA Change Order. It proposes moving NAS into a Cloud platform provided by Amazon Web Service, or AWS. The NOWG submitted our recommendation just this week recommending that this change order be approved.

Turning to the PA Change Orders on slide 5, PA Change Order 3 which Amy had mentioned, was submitted back in March and it relates to the NPAC Transition. In this change order, the Pooling Administrator addressed iconectiv's proposals for connection to the PAS. The NOWG did not recommend this change order for approval, and there has been no FCC action taken to date on this change order.

However, in June, as an alternative to Change Order 3, the PA issued a revised change order, Change Order 3A, which had a narrower scope. It split out Change Order 3 into at least two parts with Change Order 3A addressing only the PAS API specifications for the NPAC transition. The NOWG recommended approval of this revised change order, and it was approved by the FCC. It will be implemented by the end of this month. So the remainder of Change Order 3, that will be Change Order 3B or, as Amy had mentioned, 3B1 and 3B2, et cetera, has not yet been submitted by the pooling administrator.

Turning to slide 6, slide 6 just shows the NOWG's upcoming meeting schedule for our regularly scheduled monthly conference calls with the NANPA and the PA and for our NOWG-only calls. Not listed here are the additional NOWG-only meetings that I mentioned earlier to review and update the NANPA and the PA TRDs.

Then slide 7 shows the contact information for the co-chairs and where to find our meeting notes and information.

The last slide, slide 8, shows a list of NOWG participants. That concludes our report, it's kind of short today.

Betty Ann Kane: Thank you very much.

Laura Dalton: Are there any questions?

Betty Ann Kane: Any questions? Any questions on the phone? Anyone on the phone?

Laura Dalton: Thank you.

Report of the Toll Free Number Administrator (TFNA)

Betty Ann Kane: Thank you. Moving right along, we'll have the report of the Toll Free Number Administrator. We will mark your report as Item 6 for the record.

Joel Bernstein: Thank you, Chairman Kane. I'm Joel Bernstein, vice president of SOMOS.

On your handout we'll go right to page 2, the Toll-Free Number Exhaust Report. We have right now 41,157,806 toll-free numbers in use as of August 31. That leaves a spare pool of a little over 6,600,000 numbers. Our exhaust rate there is 86.16. In other words, it's about 13.84 numbers available in the spare pool for anyone to pick up.

On the second page we have a continuing chart that we've been, actually it's page 3, that we've been using to show you

how the exhaust rate is traditionally gone over the last 18 years and update a quarter, you can see how it's been going.

The next page, page 4, is Exhaust by NPA. As Gina has discussed in the past, 800 numbers as soon as they come into our system, they get reserved. So there's barely ever a day where there is not 100 percent reserved. But we have most of the 888 and 777 excess have been reserved, 855 is about three-quarters reserved, and 844 has been over 50 percent reserved. If you look at the chart on the next page, you can see that 844 actually is climbing much faster than 855 or any of the other codes. That is generally because there are more numbers available and you can make more combinations in 844. For example, 844.HEY.SOMOS was available for us to use for our helpline. But it wasn't available on 855, or 866, or any other numbers. So, as usual, that will climb up faster.

I will stop there if anyone has any questions. I know it was fast.

Then, on last page, SOMOS has been conducting a lot of outreach to our users over the last couple of years to make sure that what we're doing helps them in their toll-free business and the Resp Org to make sure that what we do is compatible with them. In that light, we are having our second annual summit in the first week, in November in Fort Lauderdale. We're calling it Collaborate and Evolve. We'll have customer panels. We'll

have presentations, discussions, town halls, knowledge bars and the like where we'll just dig deeply with our customers and help them transition with our systems as we transition, and then help us and help them, too, in their businesses.

Betty Ann Kane: Any questions?

Joel Bernstein: I'm much shorter than Gina's. I just want that noted for the record.

Betty Ann Kane: Did you say knowledge bars?

Joel Bernstein: Knowledge bars like, you know, we'll have one on various topics where people can come up and ask us questions and play with the new technology and things like that. Okay. Thank you.

Betty Ann Kane: Let me ask you a question. What's going on, you know, the trend? If you look at your chart on page 3, there was a little bump in 2001. It really went up pretty big in those three years, very steep increase, and really leveled off.

Joel Bernstein: Right.

Betty Ann Kane: Now it has taken off tremendously. I know you're having your big conference. Well, what's going on either in the industry or in business that's suddenly spurring this particularly when you think about almost everybody's got toll-free calling anyway with their cell phones or their nationwide landline plans?

Joel Bernstein: Well, thank you for that question. The dip that you saw in the mid-2000s was certainly the economy, the recession. But what we found interesting particularly in the early 2011, 2012 is that people are using toll-free numbers in innovative ways. For example, the advertising companies will use them dynamically. Insert them into an ad at any time when you're on the Web and you see a phone number. That number may be unique to that company for a short period of time or for that campaign so they'll know, oh, those banner ads on ESPN are really driving a lot of calls where the ones on CNN's website may not be. So, analytics has been a huge increase. Well, we don't know for sure, but that's what we believe is most of the increase.

But the value of toll-free continues because even if it's not that you're paying for it, still you have the national area code and it's used for branding and some people know the names. You remember those 800 numbers or 888 very simply. FCC has several and I'm sure other folks. But that remains the same and we call it the National Area Code for Business.

Report of the North American Numbering Plan Billing and Collection Agent (B&C Agent)

Betty Ann Kane: Thank you. Any other questions? The next report is from the Billing and Collection Agent. That will be Item number 7. The report will be number 7 in the record.

Mark Jackson: Good morning. My name is Mark Jackson. I'm a partner at Welch, LLP. We act as the Billing and Collection Agent for the NANPA Fund. This morning we're going to provide an overview of the funds' position at August 31, as well as look at the fund's forecasted position for the 2016-2017 fiscal year.

Page 1 of the report has the Statement of Financial Position as of August 31, 2016. At that time there was \$1,575,000 in the bank. Accounts receivable net of the allowance for uncollectible accounts was \$191,000, giving total assets of \$1,767,000. Offset against these are accrued liabilities that are for our regular suppliers of about \$482,000 leaving a fund balance of \$1,284,000.

Page 2 of the report shows the Statement of Changes in the fund balance, and it breaks down by the month the revenue and expenditures of the fund. The first 14 columns of this report show the actual results between July 2015 and August 2016. You will remember that this year is a bit of a unique year because the yearend date had changed from June 30 to September 30, so we're covering a 15-month period as opposed to regular 12-month period. Then the 15th column where it says Budget shows what we expect for September and what the final fund balance will be at the end of that month. You'll notice at the end there that we're projecting to have a surplus of \$886,000. This is made up of a \$500,000 contingency amount, as well as \$375,000 that were

budgeted for carrier audits that didn't take place during the year. The remainder difference is about \$11,000 just covering overs and unders. A more detailed explanation of that variance is located in the table at the bottom of that page.

On page 3 of the report, this shows the Forecasted Statement of Changes and Fund Balances for the upcoming fiscal year. This was based on the contribution factor that was officially approved on August 22. The contributions for the most part come in right up front. The invoices for those have been issued this week and payment is due October 12. That will result in a significant fund balance that you'll see at the bottom of the first column on October 2016, and then that will be whittled down towards the end of the fiscal year to a final projected surplus of \$575,000. That surplus is made up of a \$500,000 contingency fund; \$75,000 of which essentially covers the difference between the estimated revenues that we had versus actual revenues that are coming in, as well as there is a minimum billing requirement for carriers. So this has increased a little bit the funds that are received compared to what our contribution factor was originally set at.

Page 4 of the report summarizes the Expected Expenditures for August, as well as over the next six months. As you can see there, it's generally consistent from month to month just due to the fixed price contracts with the suppliers.

Finally, on page 5 of the report is a more qualitative updates on the operations of the fund. The main item of note is the last section talking about the budget timeline where, as noted, the contribution factor has been approved by the FCC as of August 22. Invoices have been issued out this week with payment expected to be started in October for the upcoming fiscal year.

That concludes my report. Are there any questions?

Report of the Billing and Collection Working Group (B&C WG)

Betty Ann Kane: Any questions? Thank you very much. The next item is the report of the Billing and Collection Working Group. This will be report number 8 for the record.

Mary Retka: Thank you, Chairman Kane. I am Mary Retka from CenturyLink. Along with my esteemed colleague Rosemary Leist from Sprint, we co-chair the B&C Working Group. If you look on our report, on page 2 we have the mission statement and area of responsibility. I'm not going to go over that in detail. You've all seen this before. On page 3, today we're going to talk about the monthly billing and collection oversight, our monthly evaluation of deliverables, and our B&C agent contract.

Let's start with that on page 4. As many of you know, the contract expired October 1, 2009, and we currently are working

with an extension that has been provided to Welch that will take us through December 31, 2016. I think I'll just ask now if, Marilyn, for the FCC wants to make any statement about the contract.

Betty Ann Kane: Status. Thank you.

Marilyn Jones: This is Marilyn from FCC. I spoke with Katie Ann Ferguson. She's the contracting officer for the B&C Agent Contract, and as I reported last meeting in June, she had mentioned that the contract would be solicited. The RFP will be put out at the end of August. That did not happen. I mentioned that to her and she said, now, the new target date is end of September. FCC OMB is working to consolidate that contract with another contract so that's what the holdup right now with the RFP. So they expect it end of this month.

Betty Ann Kane: Thank you. I could just get a copy and paste that for every one of these meetings. I've been on the DC Commission since 2007, and certainly been here since little after that as chair, but I hope sometime before my term on the DC Commission is up two years from now that this has been settled. All right, thank you. I know it's very difficult the contract, keep working everything. What is this issue of combining it with another contract? Will that be another contract related to the NANC or is that not public?

Marilyn Jones: Another contract related to Billing and Collection.

Betty Ann Kane: Another contract related to Billing and Collection that the FCC issues?

Marilyn Jones: Yes.

Betty Ann Kane: Not necessarily related to the NANC? Is that -- or am I? I don't want to put words in your mouth but I want to get is --

Marilyn Jones: Right. I think it is a numbering TRS-related contract. I'm not 100 percent sure. I don't read the contracts.

Betty Ann Kane: Okay. Well, we will express again our concern to the commission and to the contracting office about the difficulty. They've done, as far as we know, great job continuing on, but it always would be good to get this settled and have a long term contract in place. Okay. I'm sorry. Go ahead, Mary.

Mary Retka: Thank you. If you go to page 5, as Mark said, we have moved from the one time 15-month cycle that was done so that we could change our billing start date to align with the FCC's fiscal year, and now we're going back to a 12-month cycle and we'll stay on a 12-month cycle, and the option provided subsidizes the funding requirement by using up all of the surplus balance. So you can see the numbers, and I know Mark

walked through all of these in detail, so I won't go through them again expect to say the contribution factor will be 0.0000368 for this cycle. And as Mark said the invoices have been issued, and payments then will come due.

If you look on page 6, you'll see as I mentioned last time when we talked, we always try to keep the factor from having wild swings because we know that budgets by the providers are based on run rates and so we like not to have a large swing in the budgets for those. So as you can see from the chart here, we've tried to stay in the same sort of range and we have done that with this factor.

Then page 7 is our membership, and page 8 our next meeting is September 20. Any questions on the B&C Working Group? Thank you.

Report of the North American Portability Management LLC
(NAMP LLC)

Betty Ann Kane: Thank you very much. It says a break, but we don't need to break. The reporting of the NAPM LLC first, this will be Item number 9.

Tim Kagele: Thank you, Chairman Kane. Good morning, ladies and gentlemen. My name is Tim Kagele. I'm with Comcast. I'm one of the co-chairs of the NAPM LLC. I share that role with my esteemed colleague, Tim Decker, from Verizon. Before I get into the NAPM's report, I just want to mention that Tim will

be retiring at the end of this year, so it is Tim's last NANC meeting. On behalf of the entire NAPM and the industry community, I just want to thank Tim for his years of service to the industry. It's been fantastic and he's a pleasure to work with.

Betty Ann Kane: We will note that.

Tim Kagele: Okay. Statements of Work, since the last report, the NAPM has reviewed and approved SOW-89 Revision 3, which is a no-cost SOW and it extends the XML interface fee waiver through the end of September 2017. And that's related to NANC Change Order 372.

The next SOW is 52 Rev 3. The NAPM approved this SOW which extends the date for the NPAC SMS testbeds through the end of August 2017 after which the term would automatically renew for a subsequent 12-month period unless canceled.

In terms of general updates, the NAPM LLC remains open to new members. However, no new members were added since the last report. The NAPM LLC also voted to approve an extension with Neustar for eight letters of credit, one for each of the seven NPAC regions, and one overall LLC through the end of September 2017. That's consistent with the terms of the existing Master Services Agreement.

Lastly under general, I'm very pleased to report that NAPM LLC elected Suzanne Addington with Sprint as a project executive

to fill the unexpired term of Ron Stein from AT&T who retired recently. Let me pause there and see if there are any questions so far. Okay.

In terms of the FoNPAC's Report, there is no report this period.

LNPA Transition Activities, the TOM has conducted the LNPA transition outreach or LTO webcast meetings in July and August 2016 in accordance with the TOEP framework. They've also conducted the in-person outreach adjacent to the CTIA event that was held September 7th and 8th. They also have planned an outreach adjacent to NCTA event on September 26 and 27. On July 1, the NAPM LLC sent notices of nonrenewal to Neustar that the Master Services Agreements for each of the seven NPAC regions will not be renewed pursuant to the terms set forth in SOW 97.

Next up, on July 25 very importantly the FCC issued its final decision approving the NANC's recommendation that iconectiv serve as the next LNPA, as well as the terms and conditions of the draft Master Services Agreement that the NAPM LLC and iconectiv previously submitted to the FCC for its approval. Following that decision, the NAPM LLC and iconectiv executed the FCC-approved MSA on August 8th. The executed MSA establishes an NPAC Final Acceptance Date, or FAD, of May 25, 2018 for all seven NPAC regions including ancillary services.

The NAPM LLC continues to file LNPA Transition Status Reports monthly in the docket on the last day of the month. That process began in July 2015.

Lastly, the NAPM LLC continues to meet with the FCC and the TOM regularly to provide transition status, as well as apprise the FCC of issues or concerns pertinent to the transition. Let me pause there and see if there are any questions so far.

Betty Ann Kane: Any questions? What kind of participation are you seeing in the webcasts and the in-person events?

Tim Kagele: Chairman Kane, I'll let the TOM, I think, speak to that in more detail. But I would just offer that I believe the last TOEP webcast really had outstanding participation.

On the last page of the report is NAPM co-chair contact information, as well as general information that members of the NANC and the industry community might find useful, information pertaining to the transition, and just a reminder that a portion of every month's NAPM LLC meeting is open to the public so we want to encourage your attendance.

Thank you very much. If there are no other questions, have a good day.

Betty Ann Kane: We have a card up over here.

Tim Kagele: Oh, I'm sorry.

Betty Ann Kane: It's okay.

Ann Berkowitz: Ann from Verizon. I would also like to recognize Tim. I know he likes to stay in the background and would prefer not to have the attention, but he would be the first to tell you that I always do what he does not like to do. We're family. What can I say? But as his Verizon family, I would also like to thank him for his service. He has dedicated considerable effort to this cause and to the NAPM. I am aware of the hours and the time he puts in. I speak to him at all hours of the night and day, and we will miss him. Thank you very much, Tim.

Rosemary Leist: Rosemary Leist with Sprint. I would be remiss if I didn't thank Tim myself for co-chairing I think at least, I don't know, maybe a decade. But for a very, very long time we co-chaired the B&C Working Group together. He did all of the deliverables documents for that all of the time. He was just really great to co-chair with and it just was a fantastic experience. He will be very missed. Thank you, Tim.

Betty Ann Kane: Thank you, Rosemary. I would ask for the unanimous resolution of support. I'll send a letter to Tim on behalf of the full NANC thanking him for all of his work. This reminds us always, this is a totally volunteer organization of people who have full-time jobs and responsible jobs to their companies. To devote all this time and effort in good quality professional work is something that we all recognize and

appreciate. I wish Tim the very best in his retirement. Thank you.

Tim Kagele: Thank you, Chairman Kane.

Report of the Local Number Portability Administration
(LNPA) Transition Oversight Manager (TOM)

Betty Ann Kane: Now we will hear from the Transition Oversight Manager fondly known as the TOM. The report will be Item 10.

Bill Riley: Good morning, Chairman Kane and distinguished members of the NANC. Thank you for the opportunity to address you today. My name is Bill Riley [phonetic]. I'm a director with PricewaterhouseCoopers or PwC. I'm here representing the LNPA Transition Oversight Manager or TOM.

I'd like to give you an update on the status of the LNPA Transition, our accomplishments to date, and our planned next steps. The scope of the TOM's responsibilities --

Betty Ann Kane: Wait one moment. There's someone on the phone, I believe, who's talking that we can pick up. Please mute. Thank you. Go ahead.

Bill Riley: Sure. The scope of the TOM's responsibilities covers four areas: overseeing the transition in accordance with the transition oversight plan; conducting program management of the LNPA transition; monitoring, assessing, and reporting the

progress of the LNPA transition; and, implementing a communications plan to inform all LNPA transition stakeholders. Since the TOM's last update in June, we've been working with the NAPM, Neustar, iconectiv and other stakeholders to prepare for the LNPA transition. There have been several notable event developments over that time. First, we confirmed the successful Neustar extraction and iconectiv transfer and loading of production NPAC data for all seven U.S. regions, as well as other critical data including LEEP historical data, customer data, and the Midwest testbed data. These data files are being used in the development and test of the new NPAC SMS and ancillary services systems and processes.

We also work to understand and assess the relative merits of various approaches to contingency rollback which is a feature of the LNPA transition to provide for a temporary resumption of Neustar's role as LNPA in the event of an unrecoverable failure of a new NPAC service region. Then on July 25 the FCC released an order issuing its final decision approving iconectiv to serve as the next LNPA. This was significant because it removed any uncertainty about whether such a step was forthcoming. It also cleared the way for NAPM LLC to finalize the agreement which will govern iconectiv's tenure as the next LNPA.

The TOM assisted the NAPM by conducting a detailed review of the transition project plans that had been developed

previously in preparation for the transition. These prior plans formed the basis of date and range estimates we had provided for the transition. With the imminent execution of the iconectiv Master Services Agreement, the project plan had to be revised to update various assumptions. In the lead up to the execution of the MSA, the TOM helped to assess various LNPA timing scenarios to ensure that the timelines were well understood.

On August 8th, the NAPM LLC executed an agreement to engage iconectiv to be the next LNPA. Immediately thereafter, the TOM began to work with iconectiv to detail the timelines that had been established in the new MSA. That is, we established date expectations for the interim checkpoints that are interspersed throughout the project plan that are indications that the project is on track to hit the major milestone events in the MSA.

Also, with the contractual requirements and timing established, we were in a position to update the Transition Oversight Plan or TOP. So we reviewed that plan to identify the revisions necessary to bring that document up-to-date. That updated TOP is in the review cycle and we expect a new version to be published shortly. Additionally, throughout this period we have continued our outreach and education efforts including conducting in-person events adjacent to the LNPA Working Group on July 13 in Durham, North Carolina and the Cellular Telephony

Industry Association, CTIA, Conference in Las Vegas, Nevada on September 7th and 8th. We also conducted our seventh and eighth TOEP webcasts on July 20 and August 31.

The LNPA Transition Timeline, I'd like to take a few minutes to walk you through the transition timeline that is included in the handout we submitted for this meeting. While these dates are subject to revision, they are currently the plan of record for the LNPA transition. We've divided the LNPA transition project plan into a few main work streams: the transition project planning and communication; platform for hardware and software build; outreach and onboarding; testing and data migration and go-live. As you can see from our handout, the final acceptance date specified in the newly-executed MSA is May 25, 2018. This is the date that is targeted for iconectiv to have completed the transition of all NPAC and ancillary services and satisfy the contractual obligations necessary for the NAPM LLC to accept the new LNPA on behalf of the industry.

The first work stream, Project Planning and Communications, will go through the transition to the final acceptance date. That is, we will continue to monitor and measure the progress of the transition and communicate that progress to transition stakeholders consistent with the responsibilities I outlined at the top of my presentation.

The next work stream, NPAC Platform Build, includes the development of the hardware and software and process infrastructure of the new NPAC and ancillary services systems. This effort has been underway for some time and, as you can see from our handout, it is expected to continue through October of next year. I'll say more about this development effort in a moment.

The next two work streams are of particular interest to users of NPAC and ancillary services. They are Outreach and Onboarding, and Testing. Following the execution of the MSA, iconectiv promptly began their outreach efforts to NPAC users. Onboarding will officially get underway for service providers, service bureaus, PQRS users and vendors with a webinar that is scheduled to occur Wednesday, October 21, at 4:00 PM Eastern. For clarity, this webinar will take place immediately following the TOM's next TOEP webcast on September 21, at 3:00 PM Eastern. iconectiv's webinar will explain the onboarding process and will announce the launch of the registration website that will be used to register users for the new NPAC services.

As I mentioned, NPAC platform development will continue through October of next year and complement and system testing will be conducted throughout. But user testing of the new NPAC will begin in May of next year and continue through February of 2018, a few months prior to the transition. Then data migration

and go-live efforts, which will begin with LNPA-to-LNPA testing in May of next year, will commence in earnest in late Q1 of 2018. This will be comprised of a sequence of orchestrated events in which groups of U.S. NPAC regions will migrate from Neustar to iconectiv in waves with a soak period to follow each wave to ensure the system is operating properly before proceeding to the next wave. This will all culminate in the final acceptance of the new LNPA systems and services on May 25, 2018.

With that summary as a backdrop and before I go into the work stream timelines in particular, let me pause to see if there are any questions.

Betty Ann Kane: Yeah. Before questions, again, people on the phone, if you would please make sure that you are on mute. We're getting some background noise. For me, they're people moving papers or furniture, people or something. We do record this meeting for the transcript and so it's important that we not have that. Thank you.

Are there any questions on the report so far? Aside from the exultance that we finally got an approval and really now we can move forward into real time. Any questions? Okay. A question from the audience. Yes, please.

Joel Zamlong: This is Joel Zamlong from iconectiv. Just a clarification. I think when Bill was talking about the dates

for the webinar, he meant to say September 21st for the iconectiv onboarding. It's both on the same day. This is just to clarify.

Bill Riley: Oh, that. Yes, I misspoke.

Betty Ann Kane: That's next week, next Wednesday, September 21st.

Bill Riley: That's right. To summarize, they're both on September 21st. The TOM's is at 3:00 PM Eastern, iconectiv's will follow immediately thereafter at 4:00 PM Eastern. I apologize for --

Betty Ann Kane: Thank you for the correction. Yes, CTIA, question?

Male Voice: Since we are correcting the record, I just want to make clear that CTIA is not Cellular Telephony Industry Association. Thanks. Just CTI.

Bill Riley: Oh. Okay. Thank you.

Male Voice: I'll get in trouble if I didn't mention that.

Betty Ann Kane: Okay. Anything else?

Bill Riley: The next schedule on our handout shows the timeline associated with the NPAC/SMS platform build. This work stream includes the design and development and internal iconectiv tested the hardware, software, and facilities that will comprise the NPAC or Number Portability Administration Center. The NPAC service will be operated from a redundant pair

of secure data centers in a geographically-distributed high availability configuration to provide fault tolerance. These data centers will house the hardware and software that will run the NPAC and other ancillary services.

Development of the NPAC/SMS platform began quite some time ago, well before the designing of the iconectiv MSA. But since the MSA was executed, work has begun in earnest to build out the data centers the first step of which is to execute an agreement with the data center provider and to select and procure the hardware and software for the production facilities. As you can see from our handout, the build and internal test by iconectiv of these data centers is expected to take almost a year to complete. The testing for both the primary and secondary data centers is expected to be completed in October 2017.

The NPAC software development effort is organized into two builds or releases. Release A encompasses core NPAC/SMS services including CMIP or mechanized, and LTI or low tech interfaces, as well as data migration tools. This is the core number porting functionality of the NPAC. Internal iconectiv testing for Release A is scheduled to be completed by May of 2017. Software Release B will include additional features such as the XML interface, support for mass activity like SPID migration, mass updates, mass ports, and thousands-block pooling.

It will also include the ancillary services - ELEP, the Enhanced Law Enforcement Platform; WDNC, the Wireless Do Not Call registry; and the IVR for ancillary services. Release B development is planned to start this coming February. Internal functional testing for Release B using primarily the industry test cases is scheduled to complete approximately eight months later in October of 2017. By the end of this development effort, the new NPAC will be ready to enter a user test with the industry prior to the transition.

The next schedule in our handout shows the activities in the outreach and onboarding work stream. As you can see from the top bar, outreach and onboarding is a continuous process that will extend into the first quarter of 2018 for all NPAC user types. This extended onboarding permits iconectiv to contact onboard new NPAC users even if they are brand new to the NPAC and are joining after the onboarding and testing has already started.

Vendors of LSMS and SOA systems, as well as service bureaus, service providers and PTRS users should have recently received an initial outreach email from iconectiv with an introduction and a request for primary contact information. It is important to note that ancillary services users such as those from law enforcement or WDNC users have been sent initial outreach correspondence to date. Their outreach is scheduled to

begin in January of 2017. Registration for service bureaus, service providers, and PTRS users will begin following iconectiv's onboarding webinar on September 21st. Registration and set-up for vendors which is different from the process that other NPAC users will follow also resumed this month. LSMS and SOA vendors can expect to work directly with their iconectiv representatives to complete the registration process.

Next I want to update you on the timing for testing which is summarized in the next slide of our handout. The first thing to note is that the main flow of testing begins with vendor certification, proceeds to mechanized user testing, and then to ancillary services, and operational testing. Testing for non-mechanized users, meaning those that use the web-based LTI, is not dependent on the vendor for certification and so is able to run in parallel with other user testing.

Second, note that testing is different for each of the major user groups. First, LSMS and SOA vendors whose software is a key part of the numbering ecosystem will not go through a testing process like other NPAC users. Instead vendors will certify that their SOA and LSMS platforms interoperate properly with the new NPAC/SMS. Certification for vendors is scheduled to begin in May of 2017 and finish seven months later in December 2017.

Mechanized users who operate automated system-to-system NPAC interfaces will start testing in July. These users will execute a structured array of tests before conducting any additional testing they may elect to perform. Mechanized user testing will be scheduled in advance with each user placed into a testing slot. This will enable iconectiv to provide sufficient engineering support to each user, balance the testing over time, and facilitate timely completion of the testing program. Mechanized user testing will continue through February 2018.

Non-mechanized or LTI users will start testing in May. Since the LTI interface does not rely on tight integration with local systems, this testing does not include mandatory structured testing and is not reliant on vendor certification. Instead all LTI users once on-boarded will be provided training on the new user interface and may then conduct whatever testing they desire. The non-mechanized testing window will also continue through February of 2018.

Ancillary services user and operational testing is scheduled to begin later in October of 2017 with the delivery of software Release B. Ancillary services functionality for law enforcement agencies, telemarketing, and other WDNC users and reports users will be provided in this second software release. This testing will continue for approximately four months ending

February 2018. Operational testing includes testing of other critical supporting items including performance tuning, security optimization and verification, disaster recovery process testing, billing and other BSS/OSS systems necessary for launch.

Finally, be aware that user testing timelines include a round-robin and ad hoc testing period for all groups. So in addition to any structured testing, users will also have the opportunity to run their own individual and end-to-end test cases. Testing for all NPAC users is scheduled for completion in February of 2018.

That brings us to the actual transition of LNPA Services from Neustar to iconectiv. At the beginning of data migration, there will be LNPA-to-LNPA testing, that is Neustar to iconectiv testing, which is scheduled to last through the second quarter of 2017. This testing will validate the cutover process to confirm the readiness of the tools and procedures to be used during the ancillary services and regional migrations. This includes the division of work between Neustar and iconectiv while they are both operating as the LNPA in different NPAC regions, a period we call parallel operations. This testing will also evaluate rollback, a contingency feature to revert to Neustar if unrecoverable problems are encountered shortly following the regional migration to iconectiv.

Next. The seven months between July 2017 and February 2018 are allocated to evaluate the data region-by-region for all seven NPAC regions to identify any issues that may exist to optimize the extract, transform, and load processes. Before starting the go-live event, the transition oversight manager will hold a go/no go assessment to evaluate platform readiness, user readiness, and operational readiness. If the assessment indicates the system is ready to go live, then the team will announce the start of the transition.

The first NPAC services to be migrated are ancillary services which include ELEP, WDNC, and the IVR for those services. This is scheduled to begin February 28, 2018. Thereafter, the seven U.S. NPAC regions will be migrated in groups beginning in March 2018 with a burn-in or soak period to follow each migration. The soak period is included after the migration of each tranche of regions in order to monitor the performance of the new NPAC and to identify any issues before subsequent regions are migrated. This will continue through the migration of the last regions with final acceptance date of the new LNPA scheduled for May 25, 2018.

In summary, there have been some notable developments since our last report to this group including the FCC order finalizing the selection of iconectiv as the new LNPA and the execution of the Master Services Agreement to govern iconectiv's tenure in

that role. Subsequently we have begun in earnest to operationalize the program. Our immediate next steps include supporting NPAC user outreach and onboarding, overseeing and measuring the progress of the new LNPA's platform development, continuing to communicate status and progress to stakeholders, and to gather their input.

We also have a few upcoming outreach and education events including on September 21st our next TOEP webcast, on September 26 an in-person event to be held at the NTCA conference in Indianapolis, Indiana. I look forward to the opportunity to meet with you at one of our events and would also encourage you to submit questions or comments directly to the TOM through the comments feature that is listed on the left side of the NAPM/LNPA transition page.

This concludes my prepared remarks. With that, I'd be happy to take any questions.

Betty Ann Kane: Are there questions? This is quite an undertaking. We really appreciate that extensive report and walk through it all. I had asked before about the participation. I see on the first page of your handout you have that on the seventh webcast there were 234 participants. Then on the eighth one, on August 31st, which of course was after it became known that it really was final and it was going to happen, there were 353 participants. Has the participation been

growing or is that pretty much average, between 250 and 350 people?

Bill Riley: I would say that the attendance at that last webcast of 353 was above average. But it is typically in the range of 300, give or take.

Betty Ann Kane: On the regional migrations, could you clarify will one region be done and finished and then the next one will start or is there an overlap?

Bill Riley: Yes. The way it's envisioned is that there's obviously seven regions. We will migrate those regions in groups with a soak period to follow each where we will monitor the performance of the system and validate that it is operating properly before moving to subsequent groups.

Betty Ann Kane: Moving to a subsequent region or --?

Bill Riley: Well, a subsequent group of regions.

Betty Ann Kane: Group of regions, okay.

Bill Riley: The seven will migrate in groups. We're currently finalizing exactly the sequence of those groups.

Betty Ann Kane: That was going to be my next question, whether you had yet determined which region was going to be migrated in which order.

Bill Riley: We have begun to analyze that, and that analysis is in review. We should have something to say on that shortly.

Betty Ann Kane: So by our December meeting you'll be able to?

Bill Riley: I would think so.

Betty Ann Kane: I know that's also of interest to the states.

Bill Riley: Yes.

Betty Ann Kane: And obviously to law enforcement and other people. Any other questions from anybody around the table or on the phone? Yes, Carolee.

Carolee Hall: Thank you.

Betty Ann Kane: Identify yourself for the transcript.

Carolee Hall: Carolee Hall, Idaho PUC staff. From a state's perspective, the staff is very interested in this. I was wondering if you would be notifying each state within the region when you begin to do the transition so that we kind of have a heads-up in case something may go wrong.

Bill Riley: Yeah, we intend to publicize this as broadly as possible as soon as the information can be made public. But absolutely in the lead up to these transitions, we certainly want to eliminate the possibility that it's not well understood by anyone that might be affected.

Carolee Hall: Thank you.

Betty Ann Kane: I'd add on that. As Carolee knows, through our National Association of Regulatory Utility

Commissioners there is a staff telecom subcommittee that meets regularly by phone, as well as a commissioner's meeting by phone in November in California - the annual meeting of NARUC at which there are several days of staff subcommittee meetings. So you might want to talk with Carolee who is very active in that group about providing a report. But I say there will be a lot of staff from these states at that meeting if it's known by then, for example, which regions are going to be affected when, as well as just giving people I think the confidence that this kind of information gives - that there really is a very thought-out plan, and a very comprehensive plan for testing and transition, and for backup.

Carolee Hall: Thank you.

Betty Ann Kane: Anything else? Okay, thank you very much.

Bill Riley: Thank you.

Report of the Local Number Portability Administration

Working Group (LNPA WG)

Betty Ann Kane: Our next item is from the LNPA Working Group. Where's Paula?

Paula Campagnoli: Hello everybody. My name is Paula Campagnoli. I'm one of the tri-chairs of the LNPA Working Group. I'd like to introduce a new member as co-chair replacing Ron Steen who you had heard earlier had retired in June. So our new elected tri-chair of the LNPA Working Group is Deb Tucker.

She represents Verizon. And I think everybody knows that Dawn Lawrence is the other tri-chair.

Today we're going to cover Best Practice 4: Clarification. That was requested by the NANC. We're also going to talk about transition from PSTN to IP, Nationwide Number Portability, and the LNPA transition.

Quite a few months ago the LNPA Working Group was requested to review Best Practice 4 to assure that VoIP and IP providers' systems were included. We established a subcommittee to develop a Problem Issues Management, PIM, which was approved and accepted. The PIM is now PIM 87. Bright House, which is now Charter, took on the action item to revise the documentation that was in the previous Best Practice to clarify and add in wording that would assist with the IP and the VoIP issues.

Meetings were held on August 3rd and August 17th making edits to the EAS language. Following subcommittee approval of the draft version of the language, it was sent to the LNPA Working Group. We received it this past week. At Tuesday's LNPA Working Group meeting we approved the wording. The wording is in the process of being finalized and it will be included in the Best Practice document. That will be on the Neustar website for the LNPA Working Group if you want to refer to that. There's an icon on the report and it's a copy of the document that we updated. Any questions on that?

Transition from PSTN to IP. Mary Retka continues to provide updates on the ATIS Test Bed Landscape Team. It is focusing on the service providers' testing together during the IP transition. The Test Bed Focus Group met on 09/06. The Test Plan Subgroups continued to meet between the main group meetings moving forward toward the completion of the documentation of the individual test plans. Test plan updates were provided for one test plan, and the others remain underway. The testing plan for the provider-to-provider secure telephone identity protocols for the end-to-end SIP calls will be updated in alignment with the ATIS SIP Forum IP/NNI Task Force. Formal testing will be underway soon and the first round of testing should occur in the near term.

Several companies in the Test Bed Focus Group are active in the FCC and AT&T Industry 60-day Robo-Calling Strike Force. The next full team meeting is scheduled for 09/27. The PSTN to IP transition will continue to be part of the LNPA Working Group Report. Any questions on that? And thank you, Mary, for continuing to give us information.

Nationwide Number Portability, NNP. During the July 2016 LNPA Working Group meeting a sub-team was formed to review the approaches identified in the ATIS Packet Technologies and Systems Committees, PTSC, technical report on a nationwide number portability study. We established a subcommittee to look

at those different options. There were five options in the document that came from ATIS. The sub-team reviewed the different proposals and determined that there was only one solution out of the five that would not require us to make any changes at the NPAC.

What we did. If you all remember back in -- it was last year I think, we put together the white paper on number portability. We've added the outcome of the meeting for the Nationwide Number Portability. We've added this Appendix A to that document that was first done, the white paper. The information is in there and it's also included in the report for today. It's attached to your document. Questions?

LNPA Transition. Pursuant to the NANC chair's request, the LNPA Working Group is discussing problem areas where the LNPA Working Group could be involved in the LNPA transition. The LNPA Working Group Architecture Planning Team meeting continues to review current test cases and develop new test cases that may be needed for the LNPA transition.

John Malyar of iconectiv and Teresa Patton of AT&T chair the APT. The APT held a conference call on August 10th. A face-to-face meeting of the APT meeting was held on September 14, which was yesterday, in conjunction with the LNPA Working Group meeting. Additional APT meetings will be scheduled as required. The current status is that we have 125 test cases

that are closed, five new test cases are open, 12 test cases are pending document-only changes. The APT continues to meet and continues this work. We still have more to do. Our next meeting is on November 8th and 9th in Atlanta, Georgia. It's hosted by AT&T and Verizon. Does anybody have any questions? My nerves finally calmed down. It took a while.

Valerie Cardwell: Valerie Cardwell, Comcast. Thank you for the report and the update. Very helpful. You were saying that the Best Practice 4 the language is final, things like that. What's the timing of the process for that to get submitted for the FCC's review or adoption?

Paula Campagnoli: We've approved it at the meeting Tuesday. Because the LNPA Working Group meeting is on Tuesday and Wednesday of this week, so we finished with the Best Practice 4 on Tuesday. We're getting the final document all put together and it will be on the website. I will probably be at the next meeting unless you want to -- if you've looked at your report, there's a copy of it there. I mean we approved it. There was no objection to anything that was in the document. It passed with flying colors. So I don't know if you want to do that now or if you want to wait until the formal document is written out.

Valerie Cardwell: Yeah, that's basically my question. Because we don't meet until every quarter so I'm not clear what the next step is.

Betty Ann Kane: Right, we don't meet until -- the next meeting is December 1st. And this is something that would be a recommendation to the NANC to send to the FCC.

Paula Campagnoli: Right. And you have a copy of the document that you could open up in the report.

Betty Ann Kane: On my report, I asked - I mean it was just sent yesterday - whether people are ready to look at it or whether we want to put it on the agenda for December. Has everybody in the last 24 hours reviewed it? Is there any difficulty caused by waiting until December?

Female Voice: No.

Betty Ann Kane: Let's put it on the agenda for December then, okay? In the meantime, everybody take a look at it and start brushing it through. Thank you.

You mentioned the Nationwide Numbering Portability issue. Now I want to thank all the working groups for that work done providing the responses that the commission had asked for. We did send that report, of course, to the commission and updated it with some new information. ATIS had asked us to keep them informed of any new developments. That report did ask the FCC to move forward with some additional steps in addressing that.

We'll see what happens. Any other questions? Thank you very much.

Paula Campagnoli: Thank you.

Betty Ann Kane: This will be your report. Paula will be Item #11 for the record.

Report of the Future of Numbering Working Group (FoN WG)

Now the Future of Numbering Working Group. This written report will be number 12.

Suzanne Addington: Hello everyone. I am Suzanne Addington with Sprint. I tri-chair the Future of Numbering Working Group with Carolee Hall from Idaho PUC and Dawn Lawrence from XO Communications.

On page 2 is our normal mission and scope. That has not changed. On page 3 is our Nationwide Number Portability update. We provided a report at the last June NANC meeting. During that meeting, it was requested that the FoN Working Group review the PTSC technical report that had recently come out. So we did that in August and we've reached consensus that no changes were necessary to the report that we submitted in June. It stands as submitted.

On page 4 is a list of the other updates that we've received during our meetings from other industry forums. It keeps the attendees updated with information that's going on around the other areas of the industry such as the Test Beds

Focus Group, the ATIS/INC, the LNPA Working Group, as well as we could receive updates from the SIP Forum. We also get an update from the FCC Wire Center Trials anytime one is available. Nationwide 10-digit dialing continues to remain on our agenda for any future discussions and happenings that could occur between meetings.

On page 5 is our list of FoN attendees. It's a pretty hefty list. Page 6 is our meeting schedule. We did have our regular conference call on 08/03. Our next meeting is scheduled for October 5th. You can reach any of us here. Our contact information is provided and our meeting minutes are posted on the NANC website. That's all.

Status of the Industry Numbering Committee (INC) Activities

Betty Ann Kane: Thank you very much. Any questions? Moving right along, we have the report from the Industry Numbering Committee, the INC. This will be Document #13 for the record.

Dyan Adams: Hi. My name is Dyan Adams. I work for Verizon Communications. I'm a co-chair of the ATIS Industry Numbering Committee, along with Connie Hartman of iconectiv.

Our slides today include an overview of INC, including meetings and membership information. In addition, I will provide a review for three issues.

Slide 3 provides the membership URLs for those interested. Since the June NANC meeting, INC met face-to-face in July and just this week at ATIS Headquarters. We also held one virtual meeting in August, and our next face-to-face is scheduled for November in D.C.

Moving on to slide 5. The first issue INC is reporting on is Issue 788. If you recall, Connie provided a very detailed readout regarding 555 line number assignments and reclamation. With only one assigned 555 number currently in service and the existing use of 1212 still grandfathered, INC determined that the purpose for which this resource was intended has been accommodated by other information communication technologies and demand for the resource has declined significantly. INC agreed to create the 555 NXX line number reference document, sunset the 555 NXX assignment guidelines, and notify the FCC of its decision. As mentioned in June, the fictitious nonworking numbers 555-0100 through 555-0199 will remain reserved as nonworking numbers for entertainment and advertising. NANPA will publish a planning letter announcing the sunset of the 555 NXX assignment guidelines, and the 555 resource once Change Order #5 is approved.

Next we have Issue 819, update the pooling administration guidelines and the CO code as administration guidelines to require supporting documentation to link 30 days state

notification and interconnected VoIP application if there is a name change. INC updated the guidelines to direct the applicant to provide verifiable merger, or acquisition, or name change documentation linking the name on the application to the name on the 30-day state notification when they do not match. This update aligns with existing processes requiring the name on the application to match the interconnected VoIP provider's national authorization from the FCC and facilities readiness documentation.

Issue 823, updates to the rate center consolidation process. INC updated the guidelines to ensure that the existing process for implementing rate center consolidations is followed even when no tariff filing is required in a particular state that has been deregulated. This ensures that NANPA and the PA, iconectiv and NPAC service providers continue to have adequate notification to make the necessary updates in their systems.

Slide 8 provides the list of current issues and their associated status. Issue 788 is an initial pending, and currently issue 748 is tabled.

Betty Ann Kane: I think we have a question here before you go on. Jerome.

Jerome Candelaria: Jerome Candelaria, NCTA. I have a question on Issue 823. I just wanted to get a sense of the status of rate center consolidation from INC's perspective with

two questions. One, has INC seen that the absence of tariffs has been a barrier to rate center consolidation? Is this a real world issue? Is INC anticipating this as a possible barrier and rectifying it now? That's the first question. The second is, just generally, what is driving the interest in revising rate center consolidation? Are you actually seeing it or is it anticipation of rate center consolidation activity?

Dyan Adams: They kind of sound like the same question to me. My understanding is that more recently there was a rate center consolidation in, I believe, the state of Florida, and that is what prompted this issue. Because essentially the way the guidelines were written, it could have been interpreted that service providers didn't have to notify anybody that there was a rate center consolidation occurring in a state that doesn't require tariff filing. It was really for clarification. As far as I know, there has only been one situation like that. It was reactive. Does that help?

Jerome Candelaria: So you're saying you sided in one state in other words.

Mary Retka: This is Mary Retka from CenturyLink. I just want to correct what Dyan said. It wasn't that the guidelines could be read to say anything other than that a tariff needed to be filed. Since in this state it was no longer required that a tariff needed to be filed, the guidelines needed to be updated

to say that there could be a situation where you didn't have to file a tariff and you'd still follow the same timeframe for notifying everybody who was involved.

Dyan Adams: I guess that's what I thought I said.

Jerome Candelaria: My question was just trying to identify if there was a specific barrier to rate center consolidation, and the second question was a general question about progress with rate center consolidation. They weren't meant to be the same question.

Dyan Adams: I'm just not understanding what you're asking. I'm sorry.

Betty Ann Kane: I think he's asking are we seeing a trend towards rate center consolidation.

Jerome Candelaria: Yes, that's correct. And specific barriers particularly with this tariff issue. But I think that question has been answered.

Dyan Adams: Not that I'm aware of. I don't have any statistics or data to provide you regarding rate center consolidations.

Jerome Candelaria: Okay.

Betty Ann Kane: Mary, did you want to add on that?

Mary Retka: Jerome, Mary Retka from Century Link. To answer your question, I don't think we've seen any barrier to rate center consolidation or any significant increase. It's

just that in this specific case the state no longer required the tariff to be filed, and so we just needed to have the guidelines updated to handle a situation when a tariff wasn't required.

Jerome Candelaria: Thank you. Perhaps this question would have been best posted at Future of Numbering. INC is the one who raised the issue, but my question was more generally of the status of rate center consolidation.

Betty Ann Kane: Thank you. We'll keep that in mind for a future topic in any of the groups, if we see it, and with what's going on in the industry in general. Go ahead.

Dyan Adams: Okay. Thank you. On slide 9 are issues in final closure. There are seven listed there. Then slide 10 includes the normal relevant INC webpages that we generally provide; as well as contact information for Jackie Wohlgemuth, ATIS INC manager. That concludes my report.

Betty Ann Kane: Thank you very much. On the recommendation that you sent to the commission, on the sunset of the 555 NXX assignment guidelines and the 555 resource, when was that sent to the commission? Is there a date?

Dyan Adams: I believe that was sent in early August.

Betty Ann Kane: Early August, okay. So we want to inquire as to what the timeline might be from the commission for approval of that. Do you have any indication?

Dyan Adams: I don't know that approval is necessary. It was informing the FCC of the activities associated with the issue, and so currently we're waiting. As John stated, Change Order 5 is pending FCC approval. So that's kind of where the issue is at.

Betty Ann Kane: This is included in Change Order 5, is that what you're saying, the sunseting of 555?

Dyan Adams: Yes.

Betty Ann Kane: So it's a wrap-up with that. Thank you. Any other questions? Thank you very much.

Dyan Adams: Thanks.

Robocall Spoofing Strike Force and NANC

Betty Ann Kane: Our last report which will be Document #14 Robocall Spoofing Strike Force. You can do it from there. Go ahead

Richard Shockey: My name is Richard Shockey. I'm the chairman of the board of the SIP Forum, and also a member of the NANC here. At the request of Chairman Kane, she thought it might be important at this particular point in time to review some of the things that I've been involved with and some of us here who are also NANC participants on where spoofing/call validation/robocall mitigation are probably going. I did distribute a series of slides to the members of the NANC so, for

those of you who just want to follow along, let's try and walk through this. Then, after I'm finished, we can take a whole series of questions.

I think we all know how we got here at this particular point in time. We're all now pretty intimately aware of the Chairman's desire to put together the Strike Force along with Randall Stephenson at AT&T. But we've seen the proliferation of robocalls and spoofing really get to a point where it has become extremely dangerous.

Betty Ann Kane: Excuse me. When you referenced the chairman, you mean the chairman of the FCC.

Richard Shockey: Oh, yes, the chairman of the FCC - Chairman Wheeler.

Betty Ann Kane: Yes. Thank you.

Richard Shockey: There's a lot of contributing factors here which I don't think that we really need to go into. Obviously some of the legislation here has been ineffectual. It's also clear that Congress has been looking at this for quite some time. There have been two workshops here at the FCC. There has been a workshop at the Federal Trade Commission. I personally participated in two workshops at the CRTC in Canada on this, and certainly this has been a problem in the United Kingdom. Ofcom is actively looking at the problem as well. In

my consultant capacity, in fact I wrote a report for them outlining some of the options that were available.

So what many of you may not understand is that some of us in the technical community have been looking at this now for almost four years. This is not a surprise to all of us. Actually the beginnings of this process began with Henning Schultzrinne who was here shortly, as well as Steve Bellovin who is also from Columbia University, and he was the chief technology officer of the Federal Trade Commission. At that meeting a bunch of the engineers, myself included, were basically presented with the problem and challenged to come up with basically tactical solutions on how to move forward.

The Strike Force is really sort of an accumulation or process now that has been going on at the background for quite some time. I cannot speak for the Strike Force. I am not a member of the Strike Force. They are under a separate nondisclosure agreement. But I do have pretty intimate awareness of the inputs that are going on in the Strike Force.

What we are going to propose fairly soon is we are going to cryptographically sign every SIP/IMS Call Signaling message in the United States network. That means we're going to sign every call on the network, and we hope that this will be applied specifically to the international call gateways because I believe it allowed the enforcement analysis that has been coming

out of both the FCC here and CRTC in Canada. The United Kingdom has indicated it has been that this international call traffic has been the worst abusers of robocalls and spoofing and that we need to identify that traffic. We need to identify that traffic in such a way that the appropriate enforcement authorities can act accordingly, and we're going to use well understood tactical principles in public key infrastructure. That's called PKI for those of you who are not necessarily involved.

PKI is part of basically the fabric of our daily lives. We may not realize it but literally everything from our credit cards now to the smart meters on the side of our houses, in fact every cable set-top box has public key certificates and cryptographic data embedded in them one way or the other. There's probably 10 to 20 PKI certificates lying around your house that you didn't even know were there. So this is actually pretty well understood technology.

What we will propose is that cryptographic credentials be given to every North American service provider. The private keys that would go to the service providers are generated by the service providers. Public keys will be then distributed by some yet to be determined method. Originating service providers will make an attestation or affirm that the information contained in the call signaling is true, and that's the caller ID data. It may be CNAM data. It may be other data that is associated with

it. If the originating service provider cannot affirm that data is true, then it must not sign the invite. So the terminating service provider will validate those couple of names using the well-known public key infrastructure principles and it will act accordingly. How it's going to act I'll get into just shortly. So there are multiple standards development organizations that are involved on this. Obviously the FCC Strike Force is due to report I believe this October 17th or the 25th. But they are due to report in October.

Betty Ann Kane: I think that begs the question to Marilyn, when the Strike Force report is due. Sometime next month.

Richard Shockey: It is next month because of the very short shot block here at the request of Chairman Wheeler and the request of Randall Stephenson. Then it's still a work in progress in some way, shape, or form. But ultimately the real work will have to begin after that. So, North American carriers and some OTT providers who use NANP numbers will have to consider the implementation strategies. There is clearly a very, very strong desire on the industry to deploy this. In fact some testing through the ATIS Test Bed has already been started. There's a forum through its test bed procedures, and we'll be working on several others.

There will have to be policy wrappers associated with all of these at some point in time. So the issue that I've been

personally working on and the ATIS subforum Strike Force have been looking into quite a bit is how do we make this validation data useful to consumers. Namely, the process will not be useful to anyone unless there is some way to act on it. Either the network is able to act on it or the consumer can get data that could act on it quite a bit.

If you're looking at the slides, we're now really at slide 5. This is a rough modified subtrapezoid of how this validation process would work. We do know that the FCC has given guidance in a report in order that the carrier can block the call on the consumer's behalf at the explicit request of the consumer. So at least that regulatory problem has been eliminated. We may want to combine this with other principles of an enhanced CNAM. We know what CNAM is. It's simply 15-characters worth of ASCII. It's become dated. It's probably actually become useless. Several working groups at ATIS PTSC has been looking at expanding this out to maybe 128 to 256 characters that could carry a lot of other data as well, and that's an ongoing process.

For those who are really geeks, you can look at slide 6 because this is actually what the invite would look like. The actual cryptographic key material begins where you see identity colon. This is what's get passed back and forth along the wire.

One of the interesting things if you really look at slide 7 is the interesting network element that we wish to inject into the North American call flow, which is at the terminating side you have this thing called a verification engine. It will look at the invite. It will use the public key to validate the data that's in the invite, but it may refer to an analytics engine. Namely, the analytics engine would be taking all kinds of data that the carrier or other carriers may have to provide a judgment on whether or not the call could be trusted.

Data analytics is now pervasive in modern economic life. A very good example of data analytics is that kind of analytics since used by financial services companies, particularly credit card companies that look at your purchasing behavior and may be able to spot fraud based on an unusual pattern that it's evaluating. The SEC has provided safe harbor provisions for the exchange of data between service providers under certain conditions. There were safe harbor provisions, I believe, at the rural call completion orders and a few other things. This is another way that regulatory safe harbor could be used in this kind of data analytics function. They could be used to suppress robot calls and identify potential spoofing issues in the network. That's another thing that will probably at some particular point have to be decided somewhere in this building or in this committee to be determined.

If you look at slide 8, this is the other side of the issue which is what are we going to display to the consumer? How do we deal with the underlying subsignaling that says the network tells the phone that this is a bad call and we recommend that you do not answer it? Or this call may have been blocked or somewhere else like that. It's a direct communication from the network via Voice over LTE subsignaling that would actually show up here that would give the consumer better data. And that's where I think the goal of all of this work is leading to. That work may be undertaken in 3GPP and other standards bodies. It has not been finalized yet, but there are aspects of the Strike Force that are looking at this. So we shall see.

There's another aspect to this as well. I don't want to get into too much details. There is a significant component here for the National Security Emergency Services personnel. Getting the calls validated for that class of users may in fact be signing the phone number itself. We think we have a very, very good story to tell there. But that's a little orthogonal to the larger issue here.

If you're looking at slide number 9 in particular, this is where I think we want to go which is some sort of call display that has more verbose data. It may have address. It may have a picture. It may have a logo. It might play a theme song. It could, in fact, automatically send it to voicemail. It could be

blocked. There could be all kinds of things that we could do. Because we're not dealing with the traditional time division multiplexing and SS7, we can basically redefine the signaling in such a way to do pretty much anything we want. And because this is relatively early in the standards development process, if there are requirements that are coming from the industry or from our national regulatory authorities, we can incorporate those requirements now. It should be relatively easy to do if we know in advance what these requirements would be.

Slide #10 and actually slide #11 further enhance this sort of concept. I've been thinking personally about this idea of green is go and red is bad, but there may be gray areas in the call validation process. We may want to caution the consumer that we do not have complete information about this call. Not everyone will be migrating to these particular technologies in the short term; therefore, caution is indicated. Perhaps a yellow triangle would be another form of consumer indicator that would work. Again this is not chiseled in stone at this particular time. It is certainly open to debate and to discussion.

Slide 12 is of course the obvious which is, if the data analytics and the call process clearly and absolutely indicate that this call could not possibly be from the Internal Revenue Service, then either the call can be blocked at the network

itself, or there is clearly some indication to the consumer that under no circumstances answer this call; it could be malicious intent. Something that basically says do not answer in some way, shape, or form.

This is the other half of the call validation process, which is called validation display. The good news is that this will probably be applicable to about 35 percent of every phone call in the United States today. If our 477 competition data is relatively accurate, we basically believe or at least I believe based on my analysis that 35 percent of all calls originate on an IP network today. That should be reasonably obvious to most of you. That is 100 percent of all cable, by the way, is an all SIP/IMS network. Therefore, it's the advanced incumbent platforms including U-verse and Fios. It's about 85 percent of all Enterprise Voice in the United States including I believe inside this building because you have Cisco IP phones on every desktop.

The good news is as Voice over LTE rolls out, which is beginning to roll out right now, this is absolutely applicable to those platforms. When you combine the fact that 50 percent or more of all calls are on mobile platforms today combined with the traditional landline operations using SIP/IMS, you're now talking about 90 percent of all phone calls in the United States

could use call validation technologies within three years. So it is a pretty big deal in that sense.

Cable has pioneered putting consumer data on the television screen. They have made offerings so that the caller ID shows up on the screen and gives some limited information about that. It is not unreasonable for the cable industry to enhance that in some way, shape, or form based on these new emerging standards.

So that is where we're at at this particular point in time. There are issues that need to be resolved. There is no silver bullet here. This is slide 14, by the way. We need rings of defense, as I call it. There are other proposals that I believe will come out of the Strike Force that will be useful as we look to go forward. We needed to look at what the default and encryption schemes are going to look like. I think several other three-letter agencies are going to have some say-so in that. There is work on reactivating a dormant SS7 indicator. Mary can probably help me out on -- I keep forgetting which one that is, but they were able to validate that. It's been dormant for quite some time. That could be utilized. I can't remember it.

The question that Chairman Kane posed to me and I think is probably at the top of some of your thoughts is is there anything that the NANC needs to do? What I would caution is (1) this is early. (2) It's a very fluid situation. (3) I think

before proactive measures are taken, we need to see the output of the Strike Force. That's probably the most important thing. Probably we will all be busy in 2017 with one form of this or the other. We clearly have an obligation to tell our NANP partners in the North American Numbering Plan what we're doing.

It's my understanding that the Canadians are at least been reading the FCC Twitter feeds but are not entirely sure what is going on here, so outreach to the other 12 Caribbean countries that were going down this road aggressively would be helpful. I can speak directly to the fact that there are multiple international partners who would like to work with the United States and the NANC on how this might get implemented. The problem on a proportional basis is now as bad in the United Kingdom if not worse than it is here, so we're going to have a lot of friends in the process moving forward.

My number one issue is there is this thing called a trust anchor - which is really the institution that would issue X.509 credentials to service providers, a decision needs to be made on how that is organized; how it is constituted; how it is, yes, going to ultimately be regulated because it may well be a shared numbering resource and certainly the NANC understands the implications of shared numbering resources. People are going to think about cost. I do not want to even breathe a word about what this might cost; however, it should be very, very

reasonable. Very reasonable. Because my worst case scenario would be only 150,000 to 200,000 credentials would need to be managed and issued to service providers, so on a cost per transaction basis -- let's not go there. Okay.

However, I do want to state a personal opinion. It is my belief that the issuance of PKI credentials for the North American Numbering Plan needs to perfectly match the chain of authority for the North American Numbering Plan itself. Therefore, the binding of these credentials to who gets phone numbers and why makes perfect sense, obviously this will have impacts on secondary wholesale markets one way or the other. But we have been giving considerable attention to that in how their credential would have both an authorized primary provider as well as an authorized secondary provider. That is a tactical issue that I think could be resolved in the future.

Again, this call validation display issue, because we're going to have some interesting friends now including Apple Computer and Samsung and Google, because it's all about the phone. It is my understanding that they are participating in Strike Force in some way, shape, or form. It will be very interesting to see what kind of input they could provide to all of us on how we actually make this work for the American consumer.

One other thing from a numbering perspective, I know some of my friends are here, but they need to have a plan on how this works both on the IP transition issues, technology transition, and how the 800 system will be folded into this. It needs to be worked in parallel.

Chairman Kane, that's all I have. I do have a Kevlar bulletproof vest on, so I'll take questions.

Betty Ann Kane: Thank you very much. I did ask you to start talking about this issue and to kind of bring it to our attention. When you say we, you are speaking for the SIP and as well as the existence of course of the FCC Strike Force. Just that there are issues that have an interaction or relevance to the NANC, to the North American Numbering Plan, we can start thinking about those things.

I have two takeaways. First of all, we're only talking about devices that have display, correct, where this could work. Secondly, you're talking about consumer acts. I think about when I go on and click on a website and a little message comes up that the URL or the certificate of this is out-of-date, are you sure you really want to go forward? You can click yes or you can click no. It's a choice about protection. Is that what you're talking about with these PKIs? Because I always click yes anyway because I want to see --

Richard Shockey: It's roughly analogous. I think we need a tighter set of controls on this. But since most consumer devices such as the mobile device are basically a cable display, we also do have big TVs in our house these days.

Betty Ann Kane: I finally got a smartphone, so yes.

Richard Shockey: That is true. There are ways that I think this could work for your typical wireless phone that's on display. This is going to take time to sort of work out. There may be other display mechanisms that could be utilized in a residential environment. But again in terms of the Enterprise environment, most of those are now turning into display phones of their own. So the applicability of this is pretty substantive on day one.

Betty Ann Kane: Thank you. I've got a couple of other questions here. Let's start with Valerie.

Valerie Cardwell: Valerie Cardwell, Comcast. Thanks, Richard. Just one minor editing note, following the gentleman from CTIA - if I don't say this, I'll get in trouble. On slide 6 where it gives the example of all the information, it does reference Comcast specifically. I don't know if that was just an oversight. I would just ask in the future or for the record if you could update that.

Richard Shockey: Oh, you're talking about slide 6?

Valerie Cardwell: Correct. If you could just put carrier to make it generic and not specifically point out Comcast. I'd like to point that out and to thank Jerome Candelaria for bringing that to my attention.

Richard Shockey: Well, you can blame Chris Whent [phonetic] for that of Comcast. We're all stealing each other's slides these days. I stole his. In the future ones of this, I'll make that correction.

Valerie Cardwell: Thank you.

Richard Shockey: You're welcome.

Betty Ann Kane: So we'll say the carrier name instead of --

Valerie Cardwell: Carrier. Just carrier. Thank you.

Mary Retka: Mary Retka from CenturyLink. I just wanted to make sure that we're really clear too when we're talking about the display. Everything that we're talking about also needs to work for the wireline-based companies, and especially we have to remember there are a lot of smaller carriers that are not yet capable of providing that display.

Betty Ann Kane: You mentioned the IRS scams. The populations that are targeted very often for those IRS scams are elderly people and small businesses. In looking at certainly our reports, and I think most states would know that the population group that is most still embedded with a wireline

non-display phones would be your elderly and perhaps small businesses. Obviously you're aware of that. As we look at the consumers who may be vulnerable to these scams - robocalls, international calls, et cetera - they could be the people who are least connected with the technology that would help prevent it. I know part of your recommendation would be some things that would be automatic too.

Richard Shockey: Exactly. By the way, I do have confirmation. The Strike Force report is due on October 19th, so we'll see that. But to your point, the commission has actually given the green light for network-based blocking. I think that was an extremely positive step. The data analytics that a wireline carrier could use to protect vulnerable populations is now already in place, I think. It could be enhanced in some way, shape, or form. But that part of the puzzle is almost solved.

Mary Retka: Mary Retka from CenturyLink. I just want to clarify network-based blocking where the customer or the end user has given their approval for that, we still have paragraph 734 of the USF transformation order in place.

Betty Ann Kane: Any questions on the phone?

Greg Rogers: Greg Rogers on the phone. I think, Richard, following up on Mary's comment there, my question would be -- I'm interested in your thoughts on the verification service in

the analytics engine and how you envision keeping that pristine from anti-competitive behaviors such that you then enable network-based blocking among competitive services out there.

Richard Shockey: Hi, Greg. I know what you're saying. The network analytics here, one way or the other there is still going to be an enforcement bureau in this building. And there's going to be some sort of generalized policing here, one way or the other. The question would be how do service providers share analytics data to a certain extent. That's always been a touchy problem especially in areas involving fraud. I mean just telephone fraud in and of itself has required service providers to share some data among themselves to try and track and trace these things one way or the other. This is one of those areas where there's going to need to be considerable policy wrappers surrounding this. But the actual analytics function itself, it could be in-source to the service provider's network or it might be available from third parties as well. I mean some service providers will not necessarily do this themselves. So there's ample opportunity for entrepreneurial activity here in some way, shape, or form if the policy construct can be put together.

But, Greg, I do want to emphasize I'm very sympathetic to your position because of an orthogonal issue here. We've seen this problem of innocent blocking of email domain which is a sort of Spamhaus issue. I ran into this personally, by the way,

because I run my own domain. My email has been blocked. In fact it's been blocked by the FCC, as a matter of fact, because I am deemed untrustworthy I think by your email server for some reason. I don't know. But this is because I'm obviously using a hosting service that has its own problem. I am just the innocent victim of the blocking mechanism. But try and get Spamhaus to unblock you. That is a problem. All of this has to be done with extreme sensitivity to the problem of rural call completion, some of the guidelines and problems that rural call completions have, and these to guide us that we don't compound the problem anymore than we already have.

Greg Rogers: I appreciate that. I think that is - you thought a lot of the issues that I do think are yet to come, right? It's exactly how you implement and draw your lines for how carriers are allowed to use the analytics that they are conducting in a productive manner and not in an anti-competitive manner.

Richard Shockey: I totally agree. That's where the proper policy wrappers need to be applied. But we've seen where the problem has already happened in the email world and I have had some rather nasty fights with some of my technical colleagues going, oh, we do this in email and it's not a problem. Well, it is a problem. If you are going to block my calls, then there needs to be a recourse - someone to call. And if the first

order of resolution does not work, there probably needs to be somebody here on 12th Street that will take care of the problem for them. But certainly from the rural call completion issue, oh yeah, we don't want to go there ever again.

Betty Ann Kane: Thank you. Thank you very much, Greg, on the phone. I appreciate, again, this report. Two quick questions, just factually. Has the SIP Forum presented this to the Strike Force, just what their process is for receiving input?

Richard Shockey: It's a convoluted process. The Strike Force has not seen these slides.

Betty Ann Kane: Right. But the general recommendations.

Richard Shockey: But the input of these slides are being directly filtered in to the Call Validation Working Group.

Betty Ann Kane: Of the Strike Force.

Richard Shockey: Correct.

Betty Ann Kane: Okay. Thank you. Then the Strike Force report which is due out in the middle of October, we will take a look at that and see if there are additional issues that particularly impact the work of the NANC and the North American Numbering Plan - which clearly they will. Perhaps you can give an update report on that at our December meeting. Thank you very much.

Summary of Action Items

Next item is summary of action items. I don't believe there are any action items for us to say submit anything to the FCC. Certainly we simply received the information.

Public Comments

Do we have any public comments? Anyone else from the public to say anything? All right.

We have no other business. Our next meeting is on December 1st. Before that meeting, I'll put together a proposed schedule of meetings, the quarterly meetings for all of 2017. I know we will be quite interested throughout 2017 to continue, in particular to get the updates on the implementation of the new LNPA. I'm looking forward to receiving those reports.

Everybody have a happy fall, a happy Thanksgiving. I guess that's the next thing coming up. We will see you all in December. Thank you. I asked for public comments. We didn't have any public comments. Thank you, Carrie. Okay.

[End of file]

[End of transcript]