In the Matter of
Technology Transitions
AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition

GN Docket No. 13-5
GN Docket No. 12-353

COMMENTS ON AT&T PETITION AND REPLY COMMENTS ON IOWA NETWORK SERVICES PETITION OF PUBLIC KNOWLEDGE, THE NEW AMERICA FOUNDATION’S OPEN TECHNOLOGY INSTITUTE, AND THE BENTON FOUNDATION

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1 The Benton Foundation is a nonprofit organization dedicated to promoting communication in the public interest. These comments reflect the institutional view of the Foundation and, unless obvious from the text, are not intended to reflect the views of individual Foundation officers, directors, or advisors.
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SUMMARY

As the Federal Communications Commission begins the process of reviewing trial proposals for the phone network transition, it must ensure the trials actually serve their intended purpose: to carefully, objectively, and comprehensively collect data about new technologies that will inform the Commission’s decisions about the standards new networks must meet before they can replace the existing network infrastructure. To that end, the Commission should not approve the trials proposed by Iowa Network Services (INS) and AT&T until the applicants submit further information to clarify how the trials will operate and improve the trials’ data collection methods and consumer protections, respectively.

Just because a technology is newer does not mean it is better in all respects.² While a new network technology might bring some advantages like lower deployment costs or higher quality wireline voice service, that technology is not a true step forward for everyone if it also abandons certain calling features supported by the existing network, subjects users to longer or more frequent outages, or results in lower service quality. If well designed and carefully conducted, these trials can give the Commission the opportunity to more fully understand where new technologies may improve service for consumers and where those technologies must still be improved before carriers can convert entire communities over to them.

However, the potential utility of these technical trials does not mean that the Commission should delay in moving forward to address the many unresolved legal and policy issues in the network transition. The data from these trials—if collected scientifically—will be useful to the Commission in certain respects, but it must still address many other facets of its policies that

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impact the Commission’s goals of ensuring public safety and national security, universal access, competition, and consumer protection throughout and after the transition. The Commission should continue to develop its managerial framework for the transition even as it collects data through the trials to inform its final standards.

AT&T’s trial proposal must be considered incomplete until the company submits much more thorough and comprehensive data collection methods. If these trials are to be useful at all they must collect data objectively and scientifically. This means the Commission should not give its stamp of approval to a trial proposal without knowing, for example, what the control group will be or exactly how the trial will seek out feedback from network users.

Even if the trial designs are improved to collect all useful data in a reliable way, the Commission must recognize that trials this small in scope will necessarily be of limited utility unless they are supplemented with further trials to give the Commission a more full (and statistically significant) understanding of these new technologies. There are many questions that will remain unanswered even after these trials, and the Commission should not pretend that these two trials in Alabama and Florida give us any information at all about the impact of network transitions in, for example, colder climates, mountainous terrains, or urban areas.

Finally, the Commission must vigilantly protect network users throughout the trials. No carrier should be permitted to systematically deny existing or new customers access to services

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using the traditional network infrastructure until the Commission has ensured the replacement services are comparable—a conclusion the Commission is still far from reaching. To the extent that customers move voluntarily onto new services, the carrier must explicitly and prominently notify the customer of the known limitations or risks in the new technology. In particular, the Commission must ensure that people relying on features like medical alerts, alarm systems, 800 numbers, and collect calling are not left behind in the transition.

The technology transitions trials, like the overall transition, must serve the people using the network first and foremost. The Commission cannot assume that network changes will automatically result in better service, so the Commission must use these experiments to inform its actions to ensure the transition leaves customers better off. To that end, the proposals submitted by Iowa Network Services and AT&T are first steps toward complete proposals, but both applicants must provide substantially more information about the trials’ data collection and customer protection mechanisms before they can even be fully considered, much less approved. In their current state, both proposals are unacceptable and should not be approved. The Commission should therefore require the applicants to resubmit applications with sufficient details to fully evaluate the proposals and ensure successful, carefully designed trials.

ARGUMENT

I. The Data from These Trials Will Help the FCC Determine When Service Is Impaired During Network Transitions.

As the Commission considers the proposals put forward by AT&T and INS, it must remember that these trials—and the broader network transition—are not about any one provider. The trials should not become just a platform for a provider to show off neat new features while sidestepping the hard questions. Rather, the trials are the Commission’s opportunity to gather objective, measurable data about the performance of the existing network and new networks on a
variety of metrics. If designed and executed well, these trials will result in a broad and deep set of data that will help the Commission determine whether new technologies proposed by carriers constitute an impairment of service to the people relying on the services they have now.

If a carrier desires to “discontinue, reduce, or impair service to a community, or part of a community,” the carrier must first obtain a certificate from the Commission that “neither the present nor future public convenience and necessity will be adversely affected thereby.” As carriers now increasingly indicate their interest in updating their networks to IP-based technologies or in replacing their copper infrastructure with fiber or wireless networks (or both), it is far from certain that all of these proposed transitions would leave all people in the same or better position than they were in before. By law, carriers cannot replace their existing service with new services until the Commission certifies that doing so serves the public’s interest. It is therefore in everyone’s interest—carriers, users, and the Commission alike—to establish a set of known standards by which the Commission can determine whether a new service is as good or better than the existing service customers rely on.

These trials are an important part of the standard-setting exercise the Commission must undertake to establish when and how network users can complain about problems that arise when carriers wish to move to new technologies. A successful series of trials will result in the information and material the Commission needs to create a “checklist” for all stakeholders to work from to determine when a network service change harms the users relying on that service. It is the responsibility of the Commission to set these metrics just as much as it is the Commission’s responsibility to determine, for example, when a particular use of spectrum

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5 To the extent that some of these issues have traditionally been the province of the states, AT&T’s choice to locate its trials in the heavily deregulated states of Alabama and Florida places these responsibilities squarely on the FCC’s shoulders.
creates harmful interference. The metrics that the Commission comes away from these trials with could become the basis for user complaints or objections to a § 214(a) application, and the Commission should therefore ensure the metrics the trials produce are comprehensive.

Clear, objective metrics for evaluating a proposed network transition will benefit all stakeholders. Most importantly, these metrics will ensure that customers relying on particular features and characteristics of the existing network will not be left behind in a network transition. Carriers will also benefit from clear rules that show them exactly what standards they will need to meet to deploy a new technology in place of the networks they currently support. And the Commission will be able to turn to a standard set of metrics to make sure users are still protected while running § 214(a) proceedings efficiently.

For any possible metric with a clearly quantitative component, the Commission should use the information gathered in these trials to determine the level of variation that would be sufficiently significant to constitute an impairment of service. As the public saw during Verizon’s attempt to replace its copper-based service in Fire Island with the fixed wireless service Voice Link, allowing a carrier to unilaterally determine that its new service meets its own comparative test standards is a recipe for customer outcry, in addition to the risk of putting people using the network in serious danger.

With that frame in mind, it is evident that AT&T’s trial proposal is not yet suitable for approval. The Commission can, however, allow AT&T to fill in the blanks in its plans,

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6 There is ample precedent for the Commission creating standard measurement procedures. For example, the FCC maintains a number of measurement procedures for equipment authorizations. See Equipment Authorization Measurement Procedures, FCC, http://transition.fcc.gov/oet/ea/eameasurements.html.

consistent with the requirements laid out in the Commission’s Trials Order, and its updated proposal for comment and approval. This plan will ensure the trials result in maximally useful results without causing unreasonable delay.

II. The Current Trial Proposal’s Design Is Seriously Flawed.

The sole purpose of the technology transitions trials is to gather reliable, replicable, and useful information to help the Commission eventually determine how carriers will be able to demonstrate that new technologies are a true step forward for all users on the network. As Commissioner Pai recently explained: “we must be able to evaluate an all-IP trial with empirical data[.]” The entire point of running technical trials is gather data to inform policy decisions in the network transition. They are at heart a data-gathering exercise, and so trial proposals must thoroughly explain what data they will collect and how.

A. Data Collection Methodology

AT&T’s trial proposal currently gives far too little information about its data collection methodology and metrics to even give a meaningful response at this point. The Commission should therefore require AT&T to submit more detailed data collection plans for stakeholders to comment on before the trials are approved.

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8 See Technology Transitions Trials Order ¶¶ 22-81.
10 The Iowa Network Services proposal contains slightly more information about how and what data it will collect during the trial but, similar to AT&T’s proposal, needs further detail and more robust data collection mechanisms before it can be approved. See Application of Iowa Network Services, Inc. for Authority to Conduct a Service-Based Experiment Concerning the TDM-to-IP Transition for Centralized Equal Access Service, Technology Transitions, GN Docket No. 13-5, at 18-19 (Feb. 20, 2014) (hereinafter INS Trial Proposal).
1. **Data Collection Metrics**

The trials should collect data on a wide variety of performance indicators, including both objective technical metrics and customer feedback. AT&T’s trial proposal only sets forth two technical measures for network performance during the trials: the number of blocked calls and the number of dropped calls.\(^{11}\) These measures indicate two versions of the same problem—namely, a customer’s inability to successfully connect and complete a call.\(^{12}\) While this one data point is useful, the proposal fails to include a much broader sets of metrics by which to evaluate the new technologies AT&T proposes to use to replace the traditional services that network users rely upon. The technical trials must measure any new technologies using a variety of performance indicators, including: network capacity, call quality, device interoperability, accessibility for users with hearing disabilities, system availability, PSAP and 9-1-1 access, cybersecurity, call persistence, call functionality, and wireline coverage.\(^{13}\)

There are a number of performance problems that can arise on a network beyond simply blocked or dropped calls. Intermittent quality, noise on the line, low volume levels, problems with call routing, and issues with customer-premises equipment can all have significant impacts on a user’s experience without qualifying as a dropped or blocked call. The trials should be designed to capture information about all of these potential problems in order to obtain a full understanding of the user experience on the new technologies being tested.

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\(^{11}\) *AT&T Wire Center Trial Operating Plan* § 6.5.4, p. 54.

\(^{12}\) *Response to AT&T’s Proposal for Wire Center Trials in the IP Transition Proceeding*, CTC Technology & Energy at 4 (Mar. 27, 2014) (hereinafter *CTC Response*).

\(^{13}\) *CTC Response* at 4; *A Brief Assessment of the Engineering Issues Related to Trial Testing for IP Transition*, CTC Technology & Energy, at 4-28 (Jan. 13, 2014) (hereinafter *CTC Report*).
AT&T’s proposal also explains the results of its own previous Mean Opinion Score (MOS) testing for its PSTN, U-Verse Voice, and Wireless Home Phone services.\(^\text{14}\) In theory, MOS is a measurement that can collectively test a variety of technical impairments, and can provide a way to quantify qualitative measurements. However, AT&T’s proposal does not indicate that it will use MOS on an ongoing basis throughout the trials, nor how it would gather MOS data or how frequently it would do so. The MOS metric can be a useful data point—in addition to other objective and subjective data—and it should be included in the testing throughout the trials, not just prior to the trials.

No one metric will give the Commission a complete understanding of any given new technology. As a result, the trials’ data collection methodology should include both objective technical measurements and feedback from the actual people using the new technologies. The Commission should therefore require AT&T to expand its proposed data collection methods to fully measure all of the potential service problems that can arise on the network.

2. Data Collection Frequency

The trials should collect and publicly report data as frequently as possible on each of the metrics discussed above. AT&T’s operating plan proposes to report on customer migrations, customer issues, blocked and dropped calls, access for users with disabilities, and network outages quarterly.\(^\text{15}\) In addition to needing a wider variety of metrics on which to collect data, the trials should collect and report on this data much more frequently than on a quarterly basis.

Particularly for technical parameters automatically measured by software, there is no reason data collection cannot be broken down into an hour-by-hour analysis that would allow the Commission to see how the new technologies being tested respond to particular stresses during

\(^{14}\) AT&T Wire Center Trial Operating Plan § 6.5.7, p. 55.

\(^{15}\) AT&T Wire Center Trial Operating Plan § 6.5, pp. 53-55.
different points of the day. And while subjective feedback may be more costly to collect, it is important to obtain this information as frequently as possible to understand how the network is performing and to ensure the trial is not significantly disrupting users’ ability to rely on the network to communicate.

Furthermore, the data collected must be disclosed far more frequently than on a quarterly basis. After all, it is not as if AT&T and the independent evaluator need a long time to prepare the reports—this information will presumably be presented as raw data, without any special packaging that could obscure problems in the network. If AT&T or the independent evaluator also wishes to present a less frequent report summarizing the data that has already been released, it can be free to do so.

3. Community Feedback

The trials should solicit affirmative customer feedback through an objective third party. AT&T’s proposal does not include any explicit plans to affirmatively reach out to customers to solicit feedback throughout the trial.\(^{16}\) The closest AT&T comes to a plan to actually reach out to customers for feedback before they call to complain is a note that disability organizations may report feedback they receive from the trial communities.\(^{17}\) These plans are grossly inadequate to receive reliable customer feedback across all users. Throughout the trials, AT&T should provide for an independent third party to affirmatively solicit feedback from customers, and non-profits representing specific vulnerable communities should not bear the burden of collecting that data.\(^{18}\)

\(^{16}\) See AT&T Wire Center Trial Operating Plan § 6.5.3, p. 53.

\(^{17}\) AT&T Wire Center Trial Operating Plan § 6.5.5, p. 54.

\(^{18}\) Any additional feedback disability rights groups or any other public interest organization can add will be useful, but the trial itself should provide a baseline of information that advocacy groups can then add to or evaluate.
It is important that the trials affirmatively seek out feedback from customers, because a feedback report that only includes those people who had significant enough problems to call to complain (and who found a way to call despite presumably having trouble with their phone service) will only show the Commission the tip of the iceberg. The trials must solicit feedback from all customers, both to gather information about any benefits of the new technology and to gather information about potential drawbacks of the new technology that a customer, for one reason or another, might not rise to the level that would make a customer take the initiative to call and complain about.

The customer feedback surveys should also be designed with input from an independent third party and from representatives from the community. Having qualitative survey questions designed by an independent third party will ensure that the survey itself is objective, comprehensive, and reflects the real experience of the people using the network. The community representatives could include staff from local government, public safety entities, and residents from the community.

In addition to objective technical measurements of network performance, the trials should collect qualitative feedback from the people actually using the new technologies. This information must be collected objectively and thoroughly to ensure the results can actually help the Commission decide how to set the standards for new technologies intended to replace the current PSTN physical infrastructure.

B. Transparency

To increase transparency and improve the reliability of the data obtained during the trial, the FCC should require that an independent third party be involved with the trial’s data collection and evaluation. AT&T’s current proposal names itself as the collector and evaluator of
the trial’s data.\textsuperscript{19} But rather than permit the carrier proposing the trial to filter all of its results, the Commission should either take upon itself to collect information during the trials or require AT&T to hire an objective third party to ensure that information is collected and reported fairly during the trials.

Additionally, complaints and other customer feedback during the trials should be made publicly available throughout the trial. AT&T proposes providing a “summary” of consumer issues during the trials,\textsuperscript{20} but the Commission should require feedback to be completely available for public review—subject to certain protections for customer privacy. From a technical standpoint, bundling customer complaints into generalized categories makes it impossible to understand the intricacies of the issues at play, robs customers of the opportunity to be heard in their own words, and stifles public discourse on the technologies being tested.\textsuperscript{21} The trials should also include a mechanism by which residents in the trial communities can submit complaints to the Commission and/or the third party data collector, which are then included in the trial’s public record.

Assuming all of the relevant data is available publicly, the local community board discussed above\textsuperscript{22} can be included to periodically evaluate that feedback. This will ensure that the trials have local oversight and accountability during the pendency of the trials, should any problems occur that require immediate action to protect network users during the trials.

The trials must be transparent to instill confidence in their results. Transparency also protects network users from harms while the trials are still ongoing. The Commission should

\textsuperscript{19} AT&T Wire Center Trial Operating Plan § 6.5, p. 53 (“…AT&T will collect and report to the Commission a variety of data….).
\textsuperscript{20} AT&T Wire Center Trial Operating Plan § 6.5.3, p. 53.
\textsuperscript{21} CTC Response at 7.
\textsuperscript{22} See supra § II.A.3.
require any approved trials to make their data publicly available for all interested stakeholders to evaluate and comment on.

C. Control Group

Any data gathered during the trials will necessarily be of limited utility unless the trial includes testing and feedback from a control group that provides a baseline for evaluating results from the participants using the trial’s new technologies. AT&T proposes to use control groups for its trials, but does not specify where those controls will be and only lists “weather conditions, traffic congestion, and other network-effecting events” to determine sufficient similarity between the control and the trial site. To ensure the control groups are sufficiently similar to the variable groups, the trials should ideally use a randomly selected control group from the same wire center as the variable groups. If the Commission does not require that the control group come from the same wire center as the trial subjects, it must at the very least require that proper control groups be selected based on a wider variety of factors.

If the control group cannot be located in the same wire center as the trial, the control should at least be located in the same region. Additionally, the following technical and demographic characteristics of the two wire centers must be the same:

1) Similar age of plant (both in range and average),
2) Similar length of loop,
3) Similar level of aggregation with digital loop carriers,
4) Similar penetration of fiber,

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23 AT&T Wire Center Trial Operating Plan § 6.5.4, pp. 53-54. For its part, INS proposes using a self-selected control group consisting of those providers that opt not to use IP Centralized Equal Access service. See INS Trial Proposal at 18-19. Allowing for a self-selected control group compromises the control’s ability to act as a baseline that is similar to the variable group in all respects but those variable introduced in the trial itself.

24 CTC Response at 6.

25 Id.
5) Similar breakdown between single-family homes and multi-dwelling units, and between residential and business connections, 
6) Similar number of passings served, and 
7) Similar level of staff training.  

Finally, the control group must cover a population similar to that of the trial group. The two populations should have the same income, age, language, race/ethnicity, size of household, and level of education. The control group should also have similar anchor institutions in the community as those of the trial wire center. Without having similar wire center communities, customers’ different reactions to the new technologies may reflect variables other than the technology itself.

Without ensuring the control group is the same as the trial group in all of these characteristics, the trials results will only exist in a vacuum. To fully understand whether the trials’ new technologies truly constitute a step forward for all customers, the trials must have a control group that reveals how the network is performing now and how customers rely on it. This, incidentally, is why it is ultimately best to simply select a control group within the trial wire center. But if the Commission does not require a control group within the same wire center as the trial, it must at least ensure the control groups are equivalent in all relevant respects to the trial wire centers.

III. The FCC Must Have More Diverse Information for Statistical Significance

As Commissioner Pai recently explained, the “trials should reflect the geographic and demographic diversity of our nation—and the order sought ‘experiments that cover areas with different population densities and demographics, different topologies, and/or different seasonal

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26 Id.
and meteorological conditions.”

Even assuming the trials’ data collection methodologies are sufficiently improved to merit approval, the Commission must acknowledge that the trials before it will necessarily be of limited descriptive and predictive utility given their current scope.

AT&T currently proposes trials in only two wire centers, likely representing approximately 0.07% of AT&T’s wireline customers. While this proposal can ultimately be one small piece of the puzzle, the results from Carbon Hill and Kings Point are nowhere near broad enough to inform the Commission about all the variables that will come into play for a transition across the entire country. Public Knowledge continues to believe trials should be implemented in at least 100 wire centers, representing a variety of geographic, socioeconomic, and cultural settings, if the trials are to reach a sufficient sample size for reliable feedback.

The proposed trial locations cannot hope to demonstrate the viability of new technologies across all possible terrains. Even within their respective zones of population density. Carbon Hill cannot possibly be expected to represent all of rural America, Kings Point will not demonstrate all of the issues related to deployment in a suburban community, and AT&T’s proposals do not broach the issue of urban areas at all. The proposed trials also do not address network performance in cold climates or mountainous terrain, among others. More trials will also be needed to understand the impact of new technologies with different population densities, economic levels, language preferences, and racial and ethnic make-up.

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28 AT&T Wire Center Trial Operating Plan § 2, p. 2; CTC Response at 2.

29 See CTC Response at 2; CTC Report at 11.
Similarly, as one commenter has noted with regard to the INS proposed trials: “The risks for network and service catastrophes could be lessened with additional service trials, especially by small and rural carriers.” The Iowa trials too could benefit from the broader scope achieved by running additional trials, particularly to confirm the results of the trials before retiring the infrastructure that has thus far served communities reliably.

This is not to say that the proposed trials cannot be made into a good preliminary step in the trial process. But the trials’ significant limitations in scope and statistical significance will affect how the Commission is able to rely on the data collected and will impact what we can reasonably expect to learn from these two experiments. With improvements to the trials’ design, these experiments can be a good first step, but they will only be a first step. Even with appropriate trial design, it is evident the trials are certainly not ready to be a prelude to a real deployment.

IV. The Trials Must Include Robust Consumer Protections.

As the Commission has acknowledged, the communities relying on the network must continue to be protected through the technical trials. In this regard, AT&T’s trials must include robust consumer protections throughout the trials, and the Commission must scrutinize the


31 Technology Transitions Trials Order ¶¶ 65-69. Budget Hearing—Federal Communications Commission: Hearing Before the Subcommittee on Financial Services and General Government of the United States House of Representatives Committee on Appropriations, 113th Cong. 5-6 (2014) (statement of Ajit Pai, Commissioner, FCC) (“Third, no one can be left behind—and the order declared that ‘no consumer [may] lose[] access to service or critical functionalities’ and that residential and business customers must receive ‘clear, timely, and sufficient notice of any service-based experiment.’”).
proposal’s protections especially closely with regard to any phases that deny customers the choice to use the existing network.  

As we have seen in communities like Fire Island, New York, the Commission must be especially careful when dealing with services that fail to support key features that customers rely on. AT&T’s proposal notes that its Wireless Home Phone service does not currently support E-911 with street address, alarm monitoring, medical alerts, credit card processing, 800 number services, collect calls, and elevator phones, and AT&T’s wireline U-verse voice service does not support 800 number services, collect calls, and elevator phones. It is worth confirming that the Commission cannot even begin the approval process for any “trial” that would deny customers the ability to stay on or opt into the existing infrastructure when the new technologies fail to support features many people still rely on. Moreover, the Commission must ensure that any information distributed to customers for truly voluntary trials explains prominently and clearly the limitations of the new network so customers are not caught unaware after switching services.

CONCLUSION

The transition of our phone network is a long and complex process, and the Commission should use these trials as an opportunity to gather objective, measurable data about the new networks’ performance and how those networks impact the communities using them. The

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32 In this regard, the Commission could look to, among other sources, the National Science Foundation’s treatment of experiments involving human subjects. See, e.g., 45 C.F.R. § 690.111 (requiring that research minimize risks to subjects, select subjects equitably, obtain informed consent from subjects, make adequate provision for data monitoring, protect subjects’ privacy, and include additional safeguards to protect vulnerable populations).


Commission must require applicants to resubmit the pending trial proposals to ensure the trials protect consumers while ensuring the information gathered is objective, reliable, and useful.

Respectfully submitted,

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