North American Numbering Council

Report and Recommendation

of the

Abbreviated Dialing
For One Call Notification
Issue Management Group

October 29, 2003

Table of Contents

Executive Summary

The Abbreviated Dialing for One Call Notification Issue Management Group, (a.k.a. DIG IMG) was formed by NANC to identify and analyze the impact of employing various abbreviated dialing alternatives that could be used to implement the Pipeline Safety Improvement Act of 2002. The Act stipulates that the FCC provide assistance to the Department of Transportation (DOT) to ready a 3-digit nationwide toll-free telephone number system for use by State One Call notification systems. The NANC, a Federal Advisory Committee under the FCC, was asked to consider this requirement and provide a recommendation to the FCC.

Based on its analysis, the IMG recommends that the toll-free One Call abbreviated dialing number mandated by the Pipeline Safety Act be implemented using an N11 code, specifically 811. The N11 architecture is an established abbreviated dialing plan, recognized by both switch manufacturers and the public at large. As such, use of 811 will have less impact on customer dialing patterns, and can be implemented without the substantial cost and delay of switch development required with an alternative like #344 or an alternative like the Easily Recognizable Code (ERC) 344. Additionally, implementation of 811 for One Call Center access consumes fewer numbering resources than implementation of an ERC like 344, which otherwise has the potential for assignment as an NPA. Because of the effort that has gone into wireless implementation of #344, the IMG also recommends that in addition to 811, calls from wireless customers who are familiar with the use of #344 should continue to be routed to One Call Centers. Whether #344 continues to be supported by wireless indefinitely or is eventually retired is a matter for the stakeholders of One Call Notification to determine.

While the IMG understands that an 811 solution reduces the quantity of remaining N11 codes assignable for other purposes, 811 satisfies the legislative mandate which reflects a judgment about the importance of a 3-digit number for pipeline safety, including the Act's mandate that dialing be uniform across the entire nation. Careful consideration should be given to whether the essential objective of any future abbreviated dialing mandates could be met with the use of suitably mnemonic 10-digit toll free number. Absent the statutory requirement for a three-digit code, many of the IMG members would have recommended use of a single ten-digit toll-free number to implement uniform access to individual State One Call Centers. For example, five states use a single ten-digit mnemonic toll-free number, 888-DIG-SAFE - Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. This (or another) 8YY number could be established nationwide and routed to the appropriate state One Call Centers. More importantly, if the law allowed for a ten-digit mnemonic number, nationwide coverage could be implemented much more quickly and with less cost than a 3-digit alternative since existing numbers do not need to be vacated and switch development is not necessary.

Some industry groups and telecommunications carriers have strong preferences for using the ERC 344, thus avoiding the use of the N11 code 811. It was also noted that 811 is currently used as a 911 test code by some carriers. Therefore, while the IMG recommends the use of 811 to access individual State One Call Centers, there are other considerations that may warrant further review by the FCC and industry stakeholders.

After the IMG's recommendation was presented at the September 25, 2003 meeting of the NANC, the NANC asked that the IMG consider two additional alternatives for uniform national

access to the One Call Centers, a 10-digit toll-free (8YY) number or integration of One Call access with an existing N11 service. The IMG's deliberations on these alternatives are detailed in an appendix to this report. After considering the implementation timeliness, technical aspects and comparing the candidates, including 811 versus 8YY, the IMG elected to satisfy the legislative mandate for a 3-digit number and therefore maintains its original recommendation.

Introduction and Background

For some time, states and localities have operated "One Call Notification" numbers that contractors or property owners could call to identify underground utility locations and to avoid damage to these facilities when excavating. Many (though not all) of these numbers are toll-free and there is a national toll-free referral number that callers can dial to find the appropriate One Call number for their local area.

In 1999 the National Telecommunications Damage Prevention Council (NTDPC) concluded that there was nonetheless a need for an abbreviated, easily recognizable code for contacting the local One Call Center, particularly for mobile phone users and most notably contractors. The NTDPC selected #344 as the access code, and implementation in the wireless sector has been in progress by some wireless carriers since that time. The Common Ground Alliance (CGA) was given the task of pursuing nationwide implementation of a toll-free pipeline safety number. These efforts resulted in a legislative mandate.

On December 17th, 2002 President Bush signed the Pipeline Safety Improvement Act into law as Public Law 107-355. Section 17 of the Act provides:

SEC. 17. NATIONWIDE TOLL-FREE NUMBER SYSTEM.
Within 1 year after the date of the enactment of this Act, the Secretary of Transportation shall, in conjunction with the Federal Communications Commission, facility operators, excavators, and one-call notification system operators, provide for the establishment of a 3-digit nationwide toll-free telephone number system to be used by State one-call notification systems.

Based on discussions at the January 22, 2003 meeting of the NANC, the Abbreviated Dialing for One Call Notification IMG (DIG IMG) was formed to examine alternatives and issues related to implementation of this mandate.

Assumptions

The IMG made the following assumptions to establish a framework for its evaluation:

- The 3-digit customer dialed access code selected for implementation will translate to a toll-free number or local number for an existing One Call Center.
- On wireline-originated calls, the originating NPA-NXX or originating switch location will determine the One Call Center to which the call is sent. For wireless-originated calls, the originating Mobile Switching Center will determine the One Call Center to which the call is sent.
- To be "toll-free," the One Call Center destination telephone number used by a switch receiving calls with a 3-digit access code needs to be either a local, non-IntraLATA toll or an 8YY Services number.
- As with existing N11 access codes, customers calling the new 3-digit code will be charged the same as a local (non-toll a.k.a. toll-free) call.
- The customer-dialed 3-digit access code will ultimately be the same for all callers.
- Implementation will be national in scope and uniformity of the 3-digit access code will be available to all state One Call Centers. All telecommunications carriers will be responsible

to route, or make arrangements to have another carrier route, calls to the appropriate One Call Center.

- Operator (e.g., 0+) and Carrier Access Code (10XXX+ and 101XXX+) dialing patterns will generally not be supported.

Analysis of Alternatives

The IMG identified three possible alternatives for 3-digit access One Call implementation. These three alternatives are consistent with the legislative requirements, but not necessarily technically feasible: (1) Vertical Service Codes or other codes using a leading Star (*) or Number Sign (#) e.g. *344, #344, (2) Special Access Codes or N11 codes, and (3) Easily Recognizable Codes (ERC) such as the 344, which is a mnemonic for D-I-G. The IMG recognizes that at least three wireless carriers have implemented #344 in some of their service areas, enabling their customers in these service areas to reach local One Call Centers.

Background - Number Sign and Star

The values of NANP telephone numbers are the decimal 0 through 9. Initially, these numbers were generated by the opening and closing of a relay in dial pulse telephones. In 1958, Bell Laboratories developed Dual Tone Multi-frequency (DTMF) tones to generate numbers and to speed up connections. This became known as "Touch Tone"[1] and the characters # and * were added to push button phones. These characters now serve as network control characters. The dial equivalent to the Star (*) is the digits 1-1. There is no dialed equivalent to the Number Sign (#) character since it is not used in the dialing sequence, as is the Star.[2]

Issues Surrounding the Use of the Number Sign (#)

#XXX codes have never been defined in the NANP. Considerable standards and development would be necessary to implement this type of dialing arrangement. In addition, the # key is used as a network control character and those uses would need to be removed before any implementation could begin. Since the development of Touch Tone, the # key has been used to stop any switch timing and immediately process the call. In addition, the # key is used by Operator Services switching systems to re-originate a credit card call with the same billing information used in the preceding call. It is also used for control in connected systems, such as voice mail. The # is not a digit and only appears on DTMF phones.

In addition, some companies currently use dialing sequences with # in ways that would conflict with a One Call notification capability. For example, in at least one wireline carrier service area #344 is used as a group speed-call number, and #34 is used as a special feature activation code for Call Forwarding. Both are part of the carrier's standard dialing pattern. Eliminating these conflicts would require a dialing plan change in the service area, which would require customer

---

[1] Touch Tone is a registered Trade Mark of AT&T

[2] To minimize the amount of confusion experienced by callers using these characters, there is an effort to standardize their use. It is also important that consistent terminology be known and used when referring to these characters. The (#) and the (*) should be called the number sign and the star, respectively. Use of the terms asterisk for (*) and pound sign for (#) should not be used in documentation dealing with dialing procedures. The ITU has defined # and * as Number Sign and Star, respectively.

notification and would cause considerable customer confusion and complaints as well as potential inadvertent calls to the One Call Centers.

Wireless carriers today use # for carrier-specific abbreviated dialing for various applications. The #344 approach implemented by wireless carriers for access to One Call Centers is not out of the ordinary in the wireless world, where carriers have more control over customer equipment. Also, wireless has no need for interdigit timeouts to distinguish abbreviated dialing codes from standard 7- or 10-digit numbers since customers press a TALK or SEND key when finished dialing.

Issues Surrounding the Use of Star (*)

Vertical Service Codes (*XX and *XXX) are a numbering resource maintained and administered by NANPA. The NANPA web site (www.nanpa.com) lists all assigned and reserved Vertical Service Codes. The use of the Star as a prefix when dialing a Vertical Service Code (VSC) for call forwarding is in the form *XX. In this application, the Star indicates to the switching system that the digits following specify a certain desired feature/service from the switch. The industry has allowed the digits 1-1 to be used instead of the Star when activating or deactivating a vertical service from a rotary phone. These codes are deleted by the switch from the call stream when used to activate or deactivate vertical services.

Other considerations that would complicate wireline use of a code using Star include:

- Some switch types are hard-coded to expect only 2 digits following the Star.
- Switches unequipped to provide custom calling features or vertical services may not be capable of processing access codes using Star. This would preclude these switches, and originating calls with codes using Star, from using this alternative.
- Not everyone (the public at large) knows that the 1-1 can be used instead of the Star when using a rotary dial phone.
- As with Number Sign, Star is used by some wireless carriers today for special applications, e.g. *611 for customer service.

Use of the Star or Number Sign for One Call Notification

As detailed above, the use of access codes involving the Star or Number Sign is inconsistent with existing numbering plan definitions, and use of these characters would be difficult to implement in most wireline architectures. Therefore, the use of Number Sign and Star are not considered viable alternatives for access to One Call Centers. The following summarizes the major issues (notwithstanding the above) with implementing either Number Sign or Star in the dialing sequence for wireline:

- Codes using Star or Number Sign would not achieve the uniformity mandated by the Act since all users would not be dialing the same sequence. Rotary telephones do not include an

alternative for Number Sign, and the workaround of dialing 1-1 for Star is not widely known by the public.

- Many PBX systems use Star and/or Number Sign for feature access. Reprogramming of these systems may not always be possible and would involve considerable customer expense.
- Some switching systems are not capable of dealing with Star and Number Sign in the dialing sequence and the necessary switch development, particularly on legacy systems slated for retirement, would both delay full implementation of the One Call functionality as well as add considerable expense.

The IMG has assumed that the One Call dialing sequence should be the same for all users, as the legislative mandate specifies the establishment of a 3-digit nationwide toll-free number. As an alternative one might propose that wireline and wireless implementations differ, at least in use of Star (*) or Number Sign (#). There is ample precedent for such a divergence, e.g. wireless customers may dial 611 or *611 for repair while, where abbreviated dialing for customer service is available, wireline users can only dial 611.

Issues Surrounding the Use of ERC 344

The 344 NPA has not been assigned, however, there are NPAs in which 344 is assigned as a central office code (NXX). Unlike areas where 10-digit dialing has been implemented, where 7-digit dialing is permissible, most wireline switches would need to implement an inter-digit timeout method to distinguish between calls to either the One Call Center or calls to a 344 NXX. Inter-digit timeout would be in the 4-6 second range. If no dialed digits follow the 344 within the timeout interval, the switch will treat the call as intended for the One Call Center.

The IMG notes the following concerns regarding the use of 344:

- Assignment of an ERC may set a precedent for allocation of geographic NPAs for abbreviated dialing codes that would accelerate NANP exhaust.
- Use of a inter-digit timeout method mean callers to the 344 NXX who dial slowly may be inappropriately routed to the One Call Center. Likewise, a delay is introduced on calls intended for the One Call Center from switches where a timeout must be employed. The delay on calls intended for the One Call Center may be interpreted by an end user as a problem with the service and they may hang up and possibly not attempt to reinitiate contact with the One Call Center.
- Certain switch types may have problems in accommodating 344. There are two potential issues:
  - Inability to resolve code conflict where 344 is a working NXX and 7-digit dialing is allowed
  - Inability to support use of 344 as a 3-digit code even where 344 is not a working NXX and/or 10-digit dialing is required

  These switches would either require replacement or development work, and until then would not be able to provide the capability to use 344 as a 3-digit number.

  The following list identifies at least some of the switch types that will require development work to resolve the digit conflict with employing an ERC like 344. Vendor development would require the development of requirements, preparing switch code, creating a generic

release and then installing and testing the generic prior to distribution – a process which can take 1-3 years before it is deployed nationwide by all vendors for each switch type. Some of the switch types identified have limited vendor support for switch development or have been discontinued and would require switch replacement.

- Nortel - DMS 10
- Lucent - 1AESS and 2BESS
- Lucent - GTD-5
- Mitel - Mitel is no longer developing their public switch products – primarily used by rural carriers
- Ericsson – AXE
- Siemens – EWSD
- Stromberg-Carlson/Pressly

Issues Surrounding the Use of N11, e.g. 811

Current wireline abbreviated dialing capabilities (211, 311, 411, 511, 611, 711, 911) generally use N11 codes. Thus, wireline implementation of One Call capability with an N11 code would be comparatively simple. Some of the issues associated with use of an N11 code for One Call notification are:

- Selection of an N11 code may well mean that no more N11 codes are available for future assignment.[3]
- From a wireline perspective, the IMG notes that N11 codes are more easily implemented in existing switches/systems (many of which already have N11 software functionality) and follow the existing conventions for abbreviated dialing already familiar to customers.
- An N11 code is not as mnemonic of the "call-before-you dig application" as is 344, and would require those users accustomed to using #344 from a wireless phone to learn a new dialing pattern.
- If an N11 code is selected, before implementation can begin, the FCC must issue an order to clear any possible existing uses of the selected N11 code and also formally assign it for One-Call use. Traditionally, the FCC provides six-months for clearing locally used N11 codes, after a customer request to use the N11 code as prescribed by the FCC is approved.
- Telephone Directory providers will need to eliminate any directory listing showing 811 in use for any other purpose.
- The most likely N11 candidate for One Call implementation is 811. It is important to note that National Emergency Number Association (NENA) representatives have expressed concern (See Attachment 2) about potential mis-dialing of 811, resulting in inappropriate calls to 911. NENA also expressed concern that some companies use the 811 code for testing of 911-related functionality. The IMG believes that there is no technical constraint and that if another, non-N11, test code was made available, 911 testing would not be impaired. The IMG is not in a position to evaluate the magnitude of this impact though it is known that other companies test 911 functionality without use of the 811 code.

[3] The 211, 311, 411, 511, 711, and 911 codes are clearly already assigned. 611, while not formally allocated by FCC order, is used for repair service by a number of providers and 111 is not available for technical reasons.

Recommendation

The IMG recommends that the toll-free One Call abbreviated dialing number mandated by the Pipeline Safety Act be implemented using an N11 code, specifically 811. The N11 architecture is an established abbreviated dialing plan, recognized by both switch manufacturers and the public at large. Because of the effort which has gone into wireless implementation of #344, the IMG also recommends that in addition to 811, calls from wireless customers who are familiar with the use of #344 should continue to be routed to One Call Centers.. Whether #344 continues to be supported by wireless indefinitely or is eventually retired is a matter for the stakeholders of One Call Notification to determine.

While the IMG understands that an 811 solution depletes the quantity of remaining N11 codes assignable for other purposes, 811satisfies the legislative mandate which reflects a judgment about the importance of a 3-digit number for pipeline safety, including the Act's mandate that dialing be uniform across the entire nation. Careful consideration should be given to whether the essential objective of any future abbreviated dialing mandates could be met with the use of suitably mnemonic 10-digit toll free numbers. Absent the statutory requirement for a three-digit code, many of the IMG members would have recommended use of a single ten-digit toll-free number to implement uniform access to individual State One Call Centers. In fact, several states have employed a Dig Safe campaign for their One Call notification systems which utilize a mnemonic, toll-free, ten-digit number. Five states use a single ten-digit toll-free number, 888-DIG-SAFE - Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. A similar number is used in Kansas, 800-DIG-SAFE. Either one of these numbers could be established nationwide and routed to the appropriate state One Call Centers. More importantly, if the law allowed for a ten-digit mnemonic number, nationwide coverage could be implemented much more quickly and with less cost than a 3-digit alternative since existing numbers do not need to be vacated and switch development is not necessary.

Implementation Issues

Integration of Existing One Call Center Numbers

The IMG assumes, as noted above, that the three-digit access code selected will be mapped into existing One Call Center toll-free or local numbers. It is understood that these existing numbers may be either toll-free (8YY) numbers or geographic POTS numbers. If there is a potential for toll calls to existing POTS numbers, additional work will be required to avoid rendering a bill with toll charges to the caller. Therefore, the IMG recommends each One-Call center provide a toll free number, which can be an 8YY number or any number that is not an IntraLATA toll call from the area to be served. By doing so, this will meet the legislative requirement that callers do not incur toll charges.

National Implementation

The IMG recommends a nationwide deployment, which per the Act requires coordination with the Secretary of Transportation (or DOT), the FCC, facility operators, excavators, and One-Call notification system operators. States that have existing laws on One-Call notification will also need to be engaged in the implementation process. Industry workshops may need to be established to address technical and operational issues.

Dialing Sequences

The IMG recommends that operator (0+811) and Carrier Access Code (10XXX811 and 101XXX811) not be generally supported as is the case for other N11 codes. In most cases, these calls would receive a terminating announcement, e.g. vacant code or "Carrier Access Code dialed in error."

Timelines

Implementation cannot begin until FCC/DOT guidance is provided. Resource limitations involved in a national implementation might add additional delay since the process must be carried out for each existing One Call number into which the new 3-digit access code must be mapped. Where network element development is required, it should be noted development often occurs in fixed release cycles, which may also lengthen the interval from issuance of an order until service availability. In the judgment of the IMG, a one year interval from FCC/DOT order to network readiness of 811 to support One Call notification to existing centers is probably the most optimistic view with two years the most pessimistic.

- Individual carriers' implementation time estimates for an 811 alternative range from a few months to one year following issuance of an order specifying the One Call code to be used and the implementation parameters. Note that the shorter estimate is for implementation in a single area and assuming no competition for resources with other projects.
- All other alternatives such as ERC 344 or #344 will require switch development by some vendors, which can take 1-3 years before the generics can be released and installed. Implementation of a 3-digit solution for certain switch types could not begin until after the switch features are activated. Certain switch types have limited or no switch development support and would require replacement.

Cost Elements

The costs incurred by carriers to develop, plan and implement 811 service include several areas.

- Network element development (e.g. changes to switch or Service Control Point (SCP) software). These will not apply to all carriers and would be minimized in an 811 solution.
- Operations Support Systems. Some carriers may need changes to provisioning and maintenance systems.
- Billing Systems – Where POTS rather than toll-free numbers are used, changes may be required to suppress billing.
- Operations Expense (provisioning of translations in switches and/or databases, on-going support)
- Involvement in negotiation/liaison by One Call Centers with Regulatory Authorities
- Negotiation and preparation of contracts or tariffs by carriers with One Call Centers and other telecommunications providers.

Cost Recovery

It is recommended that the cost of implementing this service not be an unfunded mandate (see letter from the National Telecommunications Damage Prevention Council dated July 18, 2003 in

Attachment 1). The IMG notes the availability and means of cost recovery are not specified. Some LECs offer N11 service based on monthly recurring charges per existing Advanced Intelligent Network (AIN) tariffs and non-recurring charges that vary with the number of switches involved. In this proposed model (as with 211 and 511), the One Call Centers would be customers of the LECs providing the service and reimbursing them per service agreements after the cost of preparing the network is completed.

Treatment of calls for which originating location information is insufficient

Where a network has insufficient information about a caller's location to choose an appropriate One Call Center to which to route the call, it is proposed that the call be routed to the "National" One Call notification (referral) center so the caller could interact with that center's Interactive Voice Response (IVR) system to determine the proper number to call. The business arrangements and cost recovery for such calls will need to be addressed.

AIN Vs Switched-Based Architecture

The IMG believes that each carrier will select its own implementation approach. The IMG provides the following information for use by the NANC and the FCC when discussing implementation issues.

There are two supporting technologies for delivering N11 services in wireline networks: switched-based and AIN. Switch-based translations establish the N11 destination TN for each switch for all calls from a specific switch. There are multiple issues with this type of deployment, including a maximum number of N11 translations in some switch types, limitations in translating for completion to a toll-free number, and handling detailed call billing. In addition, there is no flexibility for a switch to serve two different N11 centers. All calls would be redirected to the first center provisioned. The AIN-based solution provides a means of standardizing implementations of N11 services while still meeting customer level requirements.

The N11 solution under consideration requires provisioning a N11 trigger in all AIN-certified offices for the specific N11 code, e.g., 811. With the N11 trigger provisioned, when a subscriber dials the N11 code, the AIN trigger is engaged, the call is momentarily suspended and a query is sent to the AIN Service Control Point (SCP). Service logic processing at the SCP determines the 10-digit routing information based on subscriber provisioning and sends the response to the Services Switching Point (SSP) for routing. Where switches are not AIN-capable, switch-based translations can be used to route to an AIN-capable office, allowing all customer information to be specified in one place within the AIN programming. Many small CLECs and ICOs lack SS7 and AIN capable networks and so would have to enter into agreements with other carriers. Compensation for the administrative burden, costs for billing and cost sharing would need to be determined.

In addition, some carriers may find it necessary to provision Specific Digit String (SDS) triggers in selected offices to "capture" (based upon agreement) N11 traffic routed from other carriers.

Abbreviated Dialing for One Call Notification

IMG Participants:

Bruce Bennett, Qwest
Rebecca Carr, Qwest
Jim Castagna, Verizon
Pamela Connell, AT&T
Ken Havens, Sprint
Paula Jordan, T-Mobile
John McHugh, OPASTCO
Karen Mulberry, MCI
Michael O'Connor, Verizon
Penn Pfautz, AT&T
Mike Whaley, Qwest
Cassie Yang, SBC

Appendix 1: N11 Implementation Steps

One wireline carrier offered the following synopsis of their existing N11 implementation process:

A customer subscribes to N11 service by contacting a sales account team member to establish an account and complete an AIN service questionnaire. This data includes but is not limited to:

- the time frame that the customer wants the service for test/activation
- the geographical area to which the N11 customer is subscribing (i.e. municipality, county, state, corridor;) the central offices, the NPAs and the LATAs involved
- telephone (routing) numbers of the locations receiving the N11 calls
- selection of an interLATA carrier if any options require redirection out of LATA
- error treatment for various conditions
- how the service will be charged from a coin line (free or local charge), default is local
- if routing is to a toll number, will it be to an 8YY Number

Service preparation is initiated on a first-come first-served basis. The lead time may be as little as three months but is dependant upon the size of the project, the number of projects already in the pipeline and other factors that can only be determined after a careful evaluation by an Account Team Representative.

The customer (or the LEC on the customer's behalf) must make technical and business arrangements with the CLECs, Independent Telcos, Cellular carriers and other telephone service providers in their affected service areas. This includes specifying instructions for allowing AIN triggering from calls originated by end-users obtaining service from other Telcos. Such an arrangement will allow for a ubiquitous statewide or countywide N11 service.

One wireless carrier offered the following outline of their existing N11 implementation process:

- Receive Request
- Evaluate the request (determine coverage area, is carrier licensed for the areas, how the N11 code will be used, routing information, etc.)
- Determine if Liability Protection (S800 Law) is included in the Order, **if not**
- Develop, negotiate and approve a Service Agreement
- Determine required translations
- Develop and implement Translation Work Orders
- Test translations for proper operation
- Turn up service

Appendix 2: Alternative Implementations

At its September 25, 2003 meeting the NANC requested that the IMG consider two alternative approaches for uniform national access to the One Call Centers as well as address certain other issues. This section reports on the IMG's response to these requests. Note that, as mentioned in the body of this report, a national implementation plan would need to be developed if either of these alternatives were to be selected.

One Call Center Access via National Ten-Digit Toll-Free Number

The first alternative the IMG was asked to assess was use of a single national 10-digit mnemonic toll-free number rather than a 3-digit code such as 344 or 811. This approach would use existing toll-free routing capabilities to select the One Call Center to which a call should be routed.

Use of a national toll-free number has a number of advantages but also some disadvantages:

Advantages:

- Switch development is not required and all networks (wireline and wireless) are capable of implementing this alternative.
- Avoids use of the last N11 code and potential problems related to the similarity of the recommended 811 code to 911 and the use of 811 as a routing test code for 911 by some carriers.
- No number optimization impacts as the supply of assignable NPAs is not reduced as would be the case if 344 was selected
- Customers are used to dialing toll-free numbers to access a variety of services and understand they will not be charged for the call
- Facilitates a national single number customer education program

Disadvantages

- Because existing toll-free location routing capabilities are based on the calling number, calls from wireless roamers would be routed to center associated with the caller's telephone number.[4] (This does not occur with the current wireless #344 implementation.) The IMG discussed at length the seriousness of this limitation. It was noted that, in any case, the caller may not be seeking to inquire about digging at the location from which they are calling whether the call is wireless or wireline and that One Call Centers today have the capability of transferring or referring the call to the appropriate center. Per discussions with One Call Center representatives, most calls would still be routed to the correct One Call Center even if routing were done on calling telephone number since the majority of calls are placed in the same LATA as the appropriate One Call Center.
- A 10-digit number may be harder to remember and takes longer to dial.
- While this alternative would meet the toll free aspect of the mandate, the access number is not three digits in length as stipulated in the legislation.

[4] One alternative would be to direct callers to an Interactive Voice Response system (IVR) and prompt them for information about the locality for which information was desired and route the call accordingly.

Access to Multiple Services thru an Existing N11 Code

The other alternative that the NANC asked the IMG to consider was integration of the One Call access service onto an existing N11 code. For example, it was suggested that, since the State Transportation departments already use the 511 code to provide access to traffic reports, 511 might be used to access both services. The federal Department of Transportation is also the lead agency for implementation of the One Call mandate. The IMG's view is that integration of the One Call Center access service with an existing N11 code would require routing callers to an IVR that would allow them to select the service they desire. The IVR might be part of an existing capability associated with toll-free service so as to obviate the need for ubiquitous deployment of AIN infrastructure.

This alternative too has some advantages and disadvantages:

Advantages

- Avoids use of the last N11 code and potential problems related to the similarity of the recommended 811 code to 911 and the use of 811 as a routing test code for 911 by some carriers.
- The supply of assignable NPAs is not reduced as would be the case if 344 was selected

Disadvantages

- Caller confusion and misrouting might result
- Integration with existing services would add complexity, cost, and would probably delay deployment due to the need to reach agreement with customers of the to-be-integrated N11 service and the necessary changes to tariffs and national advertising efforts.
- Since some One Call centers (and some N11 service customers) already use IVRs, the addition of a second IVR might make delay unacceptable.
- Not all states have implemented 511 service so that national implementation may be dependent on ubiquitous state deployment

The IMG discussed which N11 codes might have the least usage and thus be the best candidates for sharing with One Call access. It was recognized, however, that what might be a little used code in one area (e.g. 311 in Qwest territory) might be extensively deployed in another and vice versa. The IMG also considered whether 811 might be deployed for One Call access with provisions to integrate other services later on as needed. It was felt that many of the same concerns apply.

Other Issues

With respect to the issue raised by the NANC of One Call Center ability to transfer calls to 911 (potentially misdialed to 811), it was noted that current best practices for One Call Centers indicate that in case of an emergency (e.g., gas line rupture) the One Call Center will tell the caller to hang up and dial 911 if they have not already contacted 911, rather than attempt to transfer calls since in transfer E911 capabilities are lost. The IMG felt that network modifications to preserve these capabilities on transfer would be prohibitively complex.

One Call Center Survey

To aid in understanding the current One Call Center environment and preferences with respect to implementation of the One Call access mandate, the IMG conducted a survey of One Call Center directors. Eighteen responded to the survey and their responses are shown in Attachment 3. In particular, the IMG noted that One Call Centers opposed the integration of One Call Center access with other N11 services and preferred use of a 3-digit code over a 10-digit toll free number for One Call Center access. They also felt it important that deployment of uniform One Call access in rural areas be at the same time as in more developed areas.

Acknowledgements

The IMG would like to thank Bob Kipp and Doug Freberg of the Common Ground Alliance, and J. D. Maniscaldo of One Call Systems International for helping us understand the perspective of the One Call Centers.

Abbreviated Dialing for One Call Notification

Attachment 1: NTDPC letter

NTDPC Voting Members are AT&T, BellSouth, Level(3), MCI, SBC, Qwest, Sprint, Sprint Canada, and WilTel.

NTDPC Associate Members are Burlington Northern Santa Fe, Canadian National, Canadian Pacific, CSX, Florida East Coast Industries, Norfolk Southern, One-Call Systems International, and Union Pacific.

July 18, 2003

Members of the Abbreviated Dialing for One-Call Notification Issue Management Group:

We appreciate your efforts concerning implementation of a nationwide "call before you dig" dialing code. Members of the National Telecommunications Damage Prevention Council (NTDPC) have spent some time reviewing and commenting on your proposals. The #344 (#DIG) code, one of the options listed in your summary, has its origins in our organization. We wanted to share our rationale for selection and implementation of this code, for your consideration as all parties move toward a final decision on this matter.

In 1999, the NTDPC recognized the need for an abbreviated, easily recognizable code to assist excavators in contacting the appropriate one-call center before or during excavation. Several variations were considered, including *344, 344#, 344 – and the decision was made for #344 (#DIG) based on several factors, e.g., mobility (excavators can reach the appropriate center regardless of work location), the relation of the digits to the activity (DIG), and ease of use (at job sites, cellular phones were commonplace and had been for some time).

Implementation of the #344 (#DIG) code in the wireless sector has been in progress since this time, and in the most recent year has grown noticeably in coverage via extensive advertising, one-call center awareness efforts, and acceptance by the excavator associations. Economics of use – the fact that this call is *free for the user* – have also contributed to increased acceptance of #344 (#DIG) – and the level of use is rising as the number of participating wireless carriers escalates. These carriers embrace the fact that this effort contributes to *their* network's reliability, which in turn enhances overall homeland security. Multiple publications distributed for excavation safety and guidance list #344 (#DIG) as the standard wireless method of contacting the appropriate center. #344 (#DIG) appears on websites, excavator manuals, and newsletters, and resources have been expended to assist with awareness of this calling code. Any alternative to #344 (#DIG) implementation in wireless will negate these efforts, will require a re-education process for users, and will require additional expense for these participating carriers.

NTDPC member companies point to #344 (#DIG) implementation as one of several reasons for reductions in facility damages since 1999. We have concerns about any effort that would undo this successful, well received and familiar program, which is still growing and building, and would be particularly concerned about associated unnecessary financial burdens that would result from dismantling this program. Both the NTDPC and the Common Ground Alliance have vocalized the need for federal financial support to be an essential part of the mandate for nationwide abbreviated "one-call" dialing. We realize there are no easy solutions to this matter, but it is our collective opinion that we should stay the course and direct financial resources toward increased awareness of this existing system. Should there prove to be an obstacle that would not permit #344 (#DIG) in wireline implementation, we would urge consideration of alternatives such as #34 with a following non-essential 4, to retain the existing concept. This code could take advantage of existing advertising, awareness efforts etc. as the non-essential digit would be transparent to the user.

We would appreciate inclusion in any discussion regarding the FCC recommendation, and look forward to working with you.

Regards,

Michael D. McCrary
BellSouth Telecommunications
205-977-3441
2003 Chair, NTDPC
http://www.ntdpc.com

Attachment 2: NENA response

From: Roger Hixson

Sent: Wednesday, June 25, 2003 5:49 PM

To: johnmchughopastco@msn.com

Cc: Anna Marie Batt

Subject: RE: Proposal to use 8-1-1 for pipeline safety

Yes, we would have some concerns. Not only does use of 811 complicate mis-dialing, as it is close to 9-1-1 on the dial pad, but 8-1-1 is often used as a test number for turn-up and ongoing testing of 9-1-1 systems. This has been true long before other service codes (211, 311, 711) were assigned, and is particularly an issue now that 8-1-1 is the only 3 digit code left that can be used for that purpose.

Are there any other options for the pipeline safety application?

Roger Hixson
Technical Issues Director

NENA

-----Original Message-----
From: John T McHugh [mailto:johnmchughopastco@msn.com]
Sent: Monday, June 23, 2003 11:06 AM
To: Anna Marie Batt
Subject: Proposal to use 8-1-1 for pipeline safety

Anna Marie,
My name is John McHugh and I sit on the North American Numbering Council. We are currently working on a report to the FCC regarding the use of a three digit toll free national access number to one call centers. The requirement to establish this access was outlined in last years Pipeline Safety Act. The possible use of 8-1-1 is being considered. I have been asked to check with your organization to see if you have any concerns about the use of a code that is so close to 9-1-1 on the dial pad. If you would like to call me and discuss this in greater detail please do so at 386-673-7955.
I look forward to your response.
John
John McHugh
OPASTCO Technical Director
jtm@opastco.org
386-673-7955

Attachment 3: Results of Voluntary Survey for One-Call Operators/Facility Owners

Disclaimer

Prepared on October 24, 2003, by james.t.castagna@verizon.com, 212-395-5379, on behalf of Verizon and the North American Numbering Council's (NANC) DIG Issues Management Group (IMG). This contribution should not be used when making business decisions and does not represent an industry agreement or Verizon's opinion on this matter whatsoever.

Note that your feedback/comments may or may not be considered by the NANC, the FCC and/or the DOT in determining the appropriate number for use by one-call centers. This informational request is voluntary and is not a substitute for your participation in formal FCC/DOT proceedings.

RESPONSE DUE BY: 12 NOON on Wednesday, October 29, 2003

RETURN VIA EMAIL TO: (If not indicated otherwise, please email your completed survey to james.t.castagna@verizon.com or fax it to 212-391-2776 as a last resort.

Instructions

Please indicate your preference by highlighting in yellow either "IS" or "IS NOT." If you highlight "IS NOT" then please include comments in **bold** that substantiate your advice by providing your reason(s).

It is strongly preferred that you respond to this survey via email by:

- highlighting you preference in yellow highlight
- displaying your comments in bold text
- resaving this word document with the same file name except adding your name or the name of your organization at the end
- transmitting this saved file as to the person show above unless directed otherwise or if not known, to james.t.castagna@verizon.com

Survey Responses – Response Format Key (IS/NA/IS NOT)

1. It (11/1/6) acceptable to use the area code of the calling telephone number to route calls to the local one call center in states that have multiple one-call centers.

2. It (13/0/5) acceptable for one call centers to refer or transfer a caller to the appropriate center if when making the call the caller is at a location or telephone number that does

not correspond with the location of where the work will be performed.

3. It (15/1/2) reasonable to assume homeowners will call the center during business hours from their work location which is different from where the digging is anticipated.

4. It (17/0/1) the responsibility of the individual or the company hired by an individual, e.g., homeowner, performing the excavation to contact the one-call center.

5. It (14/0/4) important that wireless callers reach the correct local one-call center based upon their physical location when placing the call.

6. It (12/0/6) acceptable to have the one-call center transfer or refer the caller to the appropriate one-call center for misrouted calls rather than require all callers to first interface with an interactive voice response system to determine the proper one-call center.

7. It (14/2/2) preferred that public safety emergencies involving underground facilities, e.g., pipeline rupture, dial 911 immediately and only contact the one-call center after doing so.

8. It (10/0/8) acceptable for callers to first interact with a Interactive Voice Response System shared among one-call centers in States which have multiple centers to determine which center the caller needs to contact.

9. It (5/0/13) acceptable if everyone in the nation could use a single non-mnemonic 800 number when trying to reach a one-call center.

10. It (9/0/9) acceptable if everyone in the nation could use a mnemonic 800 number when trying to reach a one-call center.

11. It (17/0/1) preferred that the new number NOT be an 800 number so callers nationally will migrate to the new 3-digit code accelerating public awareness and increased calling when compared to introducing another 800 number.

12. It (12/0/6) easy for INfrequent users of the services provided by one-call centers (owners of homes and farms) to remember 811.

13. It (11/0/7) important to select a number that can be implemented nationally within the next two years.

14. It (15/0/3) important that the implementation of the number selected is not delayed in rural areas but introduced in both

rural and populated urban areas simultaneously and without delay.

15. It (17/0/1) true that although all strikes should be reported, the need for a three-digit number is to increase the volume of dig registrations with the one-call center BEFORE work begins to prevent facility strikes.

16. It (16/0/2) a national best practice not to transfer a 911 call but to ask the caller to hang up and redial 911 so location information will be known to the 911 center.

17. It (11/1/6) a common practice among one-call centers to immediately contact 911, or preferably, tell the caller s/he needs to hang up and immediately contact 911 if they are calling to report a strike that threatens public or environmental safety.

18. It (8/1/9) acceptable if all callers first have to interact with an interactive voice response system before being connected to the one-call center.

19. It (14/0/4) very important that all callers reach the proper one-call center on the first attempt even if it means all calls will be delayed until the caller enters the two alpha state abbreviation or the ZIP code of where they intend to perform work.

20. It (1/0/17) acceptable for the one-call number to be shared with an existing service, e.g., 511 - Traffic, since there are no disadvantages if a caller needs to first interface with an interactive voice response system to be routed to a one-call center.

21. It (1/0/17) acceptable for the one-call number to be shared with an existing service, e.g., 511 - Traffic, since there are no disadvantage if the number was advertised as both the one-call center number and traffic information.

22. It (2/1/15) acceptable for the new three-digit one-call number, e.g., 811, to be shared in the future.

23. It (3/0/15) reasonable to assume most one-call centers will eventually employ interactive voice response systems to route calls to the proper one-call center and eliminate the frequency of callers reaching the incorrect one-call center.