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[00:00:04] All right, I'll go ahead and call this meeting of the County Board's Information Technology Committee meeting to order. Welcome, everybody. We do not have notes from the last meeting, so we don't have to worry about that. We do have two items on the agenda tonight, or this morning, sorry.

[00:00:23] It feels like the night sometimes. We do have two items on the agenda. The first one, let's see how much time we need on that. It may be that we run over a little bit, and we'll play it by ear on the second item. So appreciate everybody's patience.

[00:00:41] There's a lot here in this first item. We're going to hear from county staff, and then we do have some guests as well that will be talking with us a little bit about what they're doing. It is on digital equity. It's an update. And Mr. Scott, I'll turn it over to you to introduce it.

[00:00:59] All right. Good morning, Chairman, Board of Supervisors, Chairman McKay. First on the agenda is an update on the overall digital equity program. We've made great strides over the last year. It was back in June of 22, since we were last year, to talk about the program.

[00:01:17] And today on the agenda, we'll talk about the updates since then. We'll talk about the broadband equity access deployment, better known as the B, grant opportunity, which is about over a billion dollars to the state and where we play in that.

[00:01:33] And then we'll have an opportunity to hear about the providers and what they're going to bring to the table for Fairfax County and the overall equity initiative around broadband. So with that, I turn it over to our equity director and lead, Carla Bruce.

[00:01:49] Thank you, Greg. Carla Bruce, County's Chief Equity Officer. And since the last time we joined you, like Greg said, there's been a lot of progress, a lot of engagement with the community and with our local partners and service providers that we can detail you on.

[00:02:07] But we wanted to begin by just refreshing your memory about our last conversation and the work around understanding what we mean by digital equity. So some of our earlier conversations really looked at the county's broadband infrastructure to assess how we're doing in that sense.

[00:02:26] And what we found is that overall, the infrastructure is there. What our challenges are in the county are really around affordability, awareness, access, and the acquisition of skills needed to make use of the digital tools that are available to people.

[00:02:46] We also worked with agencies in the community to better understand why digital equity was so important and really got a better understanding of the role it plays in terms of accessing jobs, paying bills, engaging in recreation, staying connected to people. We understand through our partners in the schools the critical role it plays in relation to school success and homework, and just staying informed and connected with the county government in the world around us.

[00:03:16] And so digital equity is extremely important beyond just broadband access, and we now have a much deeper understanding of why it's important to Fairfax County. It, in fact, is a strategic priority. In the One Fairfax policy, we had our digital, we had an area of focus around digital access and literacy for all residents. I feel like we are working toward a strong plan that will ensure that there is digital access and literacy for all residents. But what the problem is, is digital equity. And again, our understanding of equity is how are people in

[00:03:55] places faring in association to the opportunities that are present in our community. And we're addressing that in through active plans, first and foremost, our countywide strategic plan. And there are strategies embedded within the countywide strategic plan around enhancing technology skills for learners of all ages and eliminating access to barriers in digital access, and it's also featured in the Shape the Future of Aging plan, focusing primarily

[00:04:30] on seniors because we know that there are digital equity challenges across various populations. Of course, we know around low income, but we also have gained a better understanding of the significance for people with disabilities and people who are older in our community.

[00:04:48] And because of that, we have really been intentional in the partnerships that we have formed, and Evan is going to talk a little bit more about that. Good morning. I'm Evan Braff, the countywide coordinator within the Office of the County Executive. The role of countywide coordination is to elevate, accelerate, and increase coordination of county leadership initiatives and priorities.

[00:05:15] As Carla just shared, in our ever-evolving digital world, it is imperative that all residents have access to affordable internet equipment and possess the necessary digital literacy skills. Over the past year, we have been working diligently to build a solid foundation for advancing digital equity in our county.

[00:05:37] Allow me to present to you a snapshot of our digital equity efforts and outline the additional preparation we are taking. I'm specifically going to start off to the right of the slide because that's really our strongest foundation. Capacity building and partnership development are the cornerstones of advancing our digital equity initiatives in Fairfax County. We have engaged county departments, providers, and community-based organizations to strategically include them in our work. The questions we ask ourselves is, how can we enhance our collective capacity to bridge

[00:06:13] the digital divide. By forging strong partnerships and fostering collaboration, we can pull our resources, expertise, and ideas to create a more inclusive environment. Our digital landscape is really important to us. Our digital equity work relies on building a solid network of partners and stakeholders who are committed to this cause. Many of these partners are in the room today to show their support for this initiative. In Fairfax, we're very lucky to have a variety of internet options for residents. I have learned many localities across the Commonwealth are not

[00:06:52] as lucky. These internet service providers who have shown a commitment to working collectively towards digital equity, while competitors, there's a strong commitment by each of them to work collectively. You will be hearing from them shortly. Today, we are also joined by community-based partners who are demonstrating their unwavering support for this initiative.

[00:07:17] First, we have Computer Corps, who's here, Donna James, their executive director, an organization that provides digital navigation support, free devices, and digital literacy training to adults. Their impact is evident out of the 900 clients they are currently serving. 500 of those are in Fairfax County. Second, Service Source. In collaboration with Neighborhood and Community Services, they manage the Virtual Senior Center, which is a nationally recognized best model program

[00:07:51] for delivering virtual programs to older adults. Service Source is also our anchor organization for addressing the digital equity needs of our older adult and individuals with disabilities populations. And finally, our newest nonprofit, the Minority Tech Foundation, with its core mission of digital literacy, has been serving our youth and demonstrates a willingness to go above and beyond. And just a little footnote about the Minority Tech Foundation, Sean, Aaron, and Maurice

[00:08:25] all grew up on the Richmond Highway. They went and got jobs in the tech field and always had a dream of coming back and opening up a non-profit in the community that they grew up in. So I think that's pretty amazing. They told me a story yesterday. We had an event where we were promoting the Affordability Connectivity Program, and a woman showed up from a homeless shelter, and they were able to give her her first laptop and free internet service. And she just started crying, talking about this the first time she's really going to be connected to the digital world. So

[00:09:02] these organizations will serve as catalysts for change, ensuring effective communication. These three organizations work collectively to ensure that all ages and disabilities are connected to this work. To drive our digital equity work forward, we have established a coordination team.

[00:09:22] This team brings together experts, professionals, and community leaders who are passionate about bridging the digital divide. They will serve as catalysts for change, ensuring effective communication, coordination, and alignment of all efforts across all relevant departments, organizations, and the community. By establishing this coordination team, we will harness the collective expertise and energy of our partners to move our digital equities efforts forward.

[00:09:54] Allow me now to share some success stories and ongoing initiatives in our digital equity journey. First, I want to highlight the remarkable progress we made in increasing digital access for our residents. Thanks to collaborative efforts of our partners, we have experienced a 50% increase in enrollees in the Affordability Connectivity Program.

[00:10:19] So since we last met with you a year ago, we've been able to register additional 50% of folks into that program. Additionally, we partnered with Education Superhighway, a national organization focused on ACP enrollment.

[00:10:36] They're providing free training and marketing materials for them. I want to thank the Area Office on Aging for helping with us launching this initiative with the Education Superhighway. Furthermore, our public affairs office has been diligently updating our website and marketing materials to ensure that every resident is aware of the opportunities available to them.

[00:11:00] For the first time, Fairfax County is celebrating Digital Inclusion Week, an opportunity to raise awareness about digital equity. Various activities are happening throughout Fairfax County, and our signature event will be the Digital Equity Summit on Thursday, sponsored by Cox Communications and Fairfax County.

[00:11:21] Libraries and Neighborhood and Community Services are also implementing a very successful loaner program for Wi-Fi and for devices, and Neighborhood and Community Services will shortly be starting that program as well.

[00:11:37] We are also in the process of expanding Wi-Fi to all of our outside facilities at county buildings. Fairfax County, let's move this on, I want to talk a little bit about preparation. And I think the first piece you see on the slide here is around our commitment to working with other localities in this jurisdiction.

[00:11:59] Fairfax County took the lead on establishing a regional digital equity and inclusion team. In today's rapidly advancing age, it is crucial that we come together as a region to address the present issues of digital equity and inclusion. By creating a network of jurisdictions working collectively, we can enhance and strengthen digital equity, inclusion, and access opportunities for residents of Northern Virginia. This shared learning approach will not only benefit our individual jurisdictions, but will also contribute to the broader goal of supporting the Commonwealth

[00:12:34] of Virginia in achieving its digital equity and inclusion goals. As we embark on this regional collaboration, our focus will be on exploring opportunities to develop, leverage, and share resources between jurisdictions and community partners. Coordination with Fairfax County public schools is ongoing. We are working with them to ensure that parents, families, and students have the necessary support.

[00:13:02] We also today have the Economic Development Authority here. I think a crucial piece of this work is making sure that folks have opportunities to be employed in the technology field, and they're giving us direct impact and information about the types of programs we need to have to elevate people to those types of jobs.

[00:13:23] Additionally, we have been connecting with the Virginia Department of Housing and Community development for technical support and informing them about our needs. And we'll be talking a little bit more about the BEAD program, and that's actually where the funding is going to be coming out of. We also believe that one of our biggest focuses needs to be looking at our affordable multifamily

properties in Fairfax. And that's where a lot of our energy is going to go, working with the Department of Housing to just make sure that those folks in those areas are connected, have the devices and the connectivity and the digital skills to really be supported.

[00:14:02] Additionally, I want to talk a little bit now about just some of the funding processes that are ahead for us. Probably the biggest funding process ahead for us is going to be the Bede process, which I'm going to be leading the next two slides about. In the next few weeks, the Commonwealth is going to be releasing some maps that just show our connectivity here in Fairfax. And we're going to have 30 days to kind of challenge those maps. So the providers who are here today and are non-profits, we're going to have to work collectively with them to look at

[00:14:39] those maps, make sure they're accurate, and then really identify areas, other areas that need to go on the map. Because once those maps are approved, that's where the first stage of funding is going to go to. So I think it's ever more critical that we put a lot of energy. You are the only participant. So I want to talk a little bit about the Broadband Access and Deployment Program.

[00:15:08] I think as Greg and Karla have shared, Commonwealth recently got $1.4 billion. And so we have been working regionally of informing the state just about the needs up here in Fairfax. So we are not left behind. And so, as you can see in these slides, they talk a little bit about the efforts.

[00:15:33] The first phase of the funding is really going to go into the infrastructure. The Commonwealth has kind of indicated to us that there will be monies left over, and that's where the next two phases are really going to focus on the affordability piece and the connectivity piece and digital literacy. So we're really preparing our efforts to make sure that we're really linked into that.

[00:15:57] So I briefly just want to show you, these are just kind of how they're going to prioritize the work. And so as you can see, the connectivity piece and the speed piece is the first two areas. And then the last three areas start focusing on the other aspects of the funding. I'm going to turn it over to Greg. All right. At this point, I would like for the providers to give you an overview of what they're going to do in this space for us. It's been a great opportunity to partner up with them.

[00:16:29] A lot of them are within the county and provide some services already to the county, and it's an opportunity for them to help us to move this forward. So first up, you're here from Garrett McGuire, Regional Director, External and Legislative Affairs Manager from AT&T.

[00:16:47] Thank you, Greg, and thank you, Chairman Alcorn, Chairman McKay, members of the board. It's very exciting to be here today, not only through my professional role with AT&T, but I'm also a Fairfax County resident. So it's great to be able to work with the county on many of these initiatives and really accomplish a lot that Evan and others have mentioned. Also, big thanks to Evan, Carla, and Greg for the work they've done to collaborate us and bring us together. County coordinator title is very appropriate for Evan because he has coordinated us very, very well. And we've been able to really tackle issues as an industry and not just as

[00:17:26] individual companies. And I think, you know, obviously we're competitors, but this was a no-brainer to come together and work together to make sure the county is able to get to the most vulnerable residents on some of these issues. And initiatives like this are a great way to showcase the value and importance of the public, private, and non-profit sectors, joining forces to tackle challenging issues.

[00:17:47] As you know, the digital divide or the gap between those who can fully participate in the modern online world and those who can't focus around three main contributors, that's access, affordability, and adoption. At AT&T, we made it a focus of our company to help close the digital divide, and that's why we launched AT&T Connected Learning to help boost digital literacy, connectivity, and adoption.

[00:18:09] AT&T Connected Learning is our commitment to help bridge the digital divide for students, caregivers, families through technology and connectivity, as well as provide educational resources and digital literacy, particularly for those in underserved communities. We have a goal to provide 1 million people in need with digital resources through AT&T Connected Learning by 2025, and these resources focus on technology availability, which is helping make technology and connectivity accessible and available to learners who are impacted by the digital divide, digital literacy, providing parents and caregivers with the skills and confidence they need to support their child's digital learning and participate fully, safely,

[00:18:47] and responsibly in today's digital world. And learning opportunities provide students with rich educational content and learning activities to supplement their education at home and everywhere today's connected students learn. And I'm proud to say we are doing all three of these here in Fairfax County. Just this week, we will be announcing our partnership with the Minority Tech Foundation, which Evan mentioned, and the county's Department of Family Services to distribute 150 laptops to students and families throughout the county but with a particular focus in the route one corridor there will be an event tomorrow actually at the wish center where we're going to hand out some some laptops and hopefully sign up people for acp as well so if you're around

[00:19:24] four to seven at the wish center earlier this year good shepherd housing and family services received twenty four thousand dollars from at&t for a program that provides low-income high school students and adults ages 16 to 24 with the technology and digital skills training and basic skills like email drafting, word processing, resume building, job searches, and video conferencing to enhance their employment opportunities. United Community also received $25,000 this year from AT&T to support a digital learning program that will use AT&T's Achievery. This is a platform to provide underserved students with lessons in internet safety, along with grade level instruction

[00:20:03] modules to help them develop and maintain critical skills in math and reading. The Achievery is a free online learning platform created by AT&T to provide K-12 students with engaging and entertaining content paired with learning activities for everywhere today's connected students can learn. And this week, our Cricut wireless brand will be stationed throughout the county with Fairfax Neighborhood and Community Services to sign up people for the Affordable Connectivity Program. So as you can see, we're very, very invested in Fairfax County, not only from the AT&T, obviously, business side, but also giving back to the community and making sure we're lifting everybody up. So I appreciate the chance to share some of these initiatives with

[00:20:42] you and give you my word that AT&T is committed to working throughout Fairfax County on these initiatives into the future. Thank you. Thank you, Mr. McGuire. Next up, we'll have Misty Allen, Regional Vice President in Government Regulatory Affairs and Community Impact.

[00:20:59] Ms. Allen. Thank you, Greg. Good morning, everyone. Misty Allen with Comcast. I'm going start with something I read on LinkedIn today. It was the digital divide is the issue, digital equity is the

goal, and digital inclusion is the work. And obviously what you're going to hear today is everything that we're doing in partnership with the county about the work, the digital inclusion work. Comcast is really proud to be a service provider in the county and having collaborated with all these great companies in the county over the past several months. When it comes to

[00:21:34] achieving digital equity comcast has been an industry leader having launched our internet essentials program and i use that word specifically program uh over 11 years ago um so working towards solving the digital divide is not new to us it is a firm commitment of the company through internet essentials we too work to address the three primary barriers of internet adoption affordability access to sufficient technology and digital skills the 995 price our very basic intro price has been unchanged for over 11 years um and that's

[00:22:14] something too that we feel is very important uh to maintain that we have evolved our program over the years we've expanded our eligibility we have added additional faster tiers of service to the program, and all-inclusive of charges. Again, really targeting on our income-constrained households. But let me pause for just a moment and emphasize that while Internet Essentials is more than just a low-cost product tier, and we'll get more into that in a moment, I really want to emphasize that, importantly, that if every eligible family, senior citizen, person with disabilities,

[00:22:51] Pell Grant student enrolled in the federal affordable connectivity program, internet at home can be free to these households. And it's so important for us to be advocates in this together to ensure that funding for the affordable connectivity program continues. There is absolutely no reason why any eligible household here in Fairfax County should need to pay for home internet service. So while it's important for us to advocate for the continuation of affordable connectivity program, know though that companies like Comcast will continue our programs like

[00:23:27] Internet Essentials and continue to provide affordable options for customers. I will conclude quickly by touching on two other barriers of internet adoption, and that is around access to technology. And through Internet Essentials, any customer who is enrolled in Internet Essentials has access to buy a discounted laptop computer for $150, and that can be refurbished every four years. So again, knowing that technology can be outmoded, we have a program in place to help those families connect with newer technology.

[00:24:04] We also too have created a curated library of online digital skills content and learning center. So you can go to internetessentials.com, click on the learning center, and you'll find hundreds of hours of content of how to use email, how to safely navigate the web, Wi-Fi 101, and even fun things for families with children in the school system.

[00:24:26] We have Moshi Kids, or we have this amazing virtual tour of the U.S. Capitol and the District of Columbia for a civics education that was produced by Discovery Education. So all of that's available for free online.

[00:24:41] So we are really proud to be part of the Fairfax community. We look forward to continuing to partner. with Evan and Greg and Carla on this important, incredible work. And thank you again for hosting us today on this important week of Digital Inclusion Week. Thank you.

[00:24:58] Thank you, Ms. Allen. Next, we'll have Catherine Falk, VP, Market Lee for Cox Communications. Good morning. It's so great to be here. I'm Catherine Falk, Market VP for Cox

Communications, proud graduate of Fairfax County Public Schools and a resident of the Hunter Mill District.

[00:25:16] At Cox, we have been proud to embrace digital equity since 2008 in Fairfax County. We started back then with a pilot program in the Arlington County Boulevard Community Development Center, and in fact, the then chairman, Jerry Conley, came to cut the ribbon right before he was sworn into Congress.

[00:25:37] It was then in 2010 that we launched our first national program that is still the cornerstone today connect to compete which is a program that allows new and existing customers to have who have a child k-12 to who participate in a government assistance program to participate in our 995 internet program with 100 megs of service it's also free with the affordable connectivity program and it provides a free wi-fi modem to allow the whole family to benefit access to our 3 million

[00:26:09] wi-fi hotspots we also have options for low cost computers free digital academy resources and there's no credit check there is no deposit no term agreement no upfront costs and no late fees we're very proud of that we also offer connect assist program for families on other kinds of assistance who don't have a child and all of these programs we actively promote along with our Affordable Connectivity Program through all of the channels and in all of the areas that we provide service. In addition, we also offer a Connect Access Partner Program whereby we can

[00:26:49] partner with nonprofits, schools, other community groups to subsidize internet for groups that they might have. But this week we're really proud to host the very first Digital Equity Summit in partnership with Fairfax County and our great partners, Evan, Carla, and Greg. We're thrilled to have that on Thursday morning and look forward to you joining us. We'll have lots of leaders and all the key stakeholders in the room so that together we can talk about how we can work to advance the important work of broadband adoption and access in Fairfax County. But wait, there's

[00:27:24] more. On Thursday, we'll be at the Colmore Boys and Girls Club to have a $20,000 donation of a innovation lab at the Boys and Girls Club. It's a renovation there. We're proud to participate with the Boys and Girls Club, and in fact, just had another great one at the Annandale Boys and Girls Club, $20,000 grants from the James M. Cox Foundation, and we really appreciate the support of NCS in both of those events. We also have a digital equity ambassador, Malcolm Mitchell, who we just recently brought to town. He visited Belvedere Elementary, Montrose Alternative

[00:28:02] Middle School, and Annandale High School to spread the word about the importance of reading and digital learning and broadband access. So at Cox's this year, we celebrate our 125th year in business. We are proud to say that we are all in on digital equity and proud to be a leader in this area since 2008. And again, I just really want to thank our partners, Evan, Carla, and Greg for all their support. Thank you. Thank you, Ms. Falk. Next you're here from David Bourne,

[00:28:32] Government and Nonprofits Executive Relations in Virginia for T-Mobile. Hey, good morning, I guess. Thank you all for being here and for having us. It's a great honor for T-Mobile to be here, and I super appreciate it. So I wanted to start by just sharing a mantra that we use at T-Mobile, and it guides how we approach our interactions every day, and that is to be the best in the world at connecting people to theirs so our commitment to fairfax county was you know just reaffirmed last month when we completed a move from the old sprint headquarters over there on

[00:29:10] sunrise valley drive uh we committed to making fairfax county the east coast headquarters for t-mobile and that's in part by ideas spun from the fairfax county economic development authority and some conversations uh we made fairfax our home and it provides a wealth of senior level executives numerous directors and hundreds of employees to the county as well as great opportunities for resource sharing and we welcome you all to come out and visit anytime you want to talk about wireless connectivity and solutions uh that being said i'm also a resident of fairfax county and i have two boys that uh you know are graduating one this year one last year they go to

[00:29:45] mason um i live in supervisor heritage district and you know for me to be here and work on these programs with carla evan and mr scott it's just amazing um i love it because actually i feel kind great getting the benefit to see my community raise up and really be out of some support and help. For me, I would say this mantra that we have of being the best in the world at connecting people with others has been really a driving factor. We like the idea because it helps us work with other private sector vendors, nonprofit organizations, and do a lot of community building and provide a pathway to sustainable digital independence for the residents here. T-Mobile

[00:30:25] has always been a champion of digital equity. Prior to the pandemic in 2019, we identified the growing gap in digital equity and took it upon ourselves to launch Project 10 Million, which to this day is helping eligible households obtain free internet access and low-cost devices. It bridges that digital divide and really helps extend out to families in need free hotspots with internet that they can sign up for on an individual basis. Then in 2020, we saw the need through the pandemic and launched our Empower Ed programs. This supports educators and students with connected Chromebooks, hotspots, and other remote learning resources, keeping teachers and students connected.

[00:31:01] In 2021, T-Mobile launched our home internet services, which offers fixed wireless internet to homes at really great speeds that can equal broadband. Under the new ACP guidelines, these became eligible for funding in 2023, and we now offer those to residents of Fairfax County qualified through the national verifier, unlimited home internet access, and it's as little as $20 per month. This is around the county. We're building these programs daily, and we try to extend these things out to the residents and get the word out through T-Mobile USA, Metro by T-Mobile, and numerous different vendor brands that we have. Currently, we're here to promote digital equity

[00:31:38] and inclusion, and in over 30 retail stores in Metro by T-Mobile and T-Mobile US, and numerous authorized retailers that reside in the county as a part of everyday dna we were fortunate enough to bring them to opportunities working with mr braff uh carla bruce and mr scott and what we found is that we have boots on the ground in support of the county through these different channels when we told them about digital equity and inclusion week they stepped up to really help and they've offered to sponsor with ashley morris at celebrate fairfax community building events providing staffing to support digital literacy and education through the libraries and we're there to support and help

[00:32:16] with nancy ryan market kosich and the great job that they're doing every day in their technology labs to bring digital equity and information and community engagement we're also showing up with volunteers at solutions to the over 22 separate event locations around the county focusing on seniors and community centers in support of the great work of robert quinn and everything going on at the ncs and these are directly tied to helping residents sign up through acp through our metro by T-Mobile brands. Outside of that, and in addition to providing resource programs and support, we are committed to making

5G wireless connectivity available all over the county. We have identified projects to help bolster up municipal 5G, improve in-building

[00:32:54] coverage, and have expanded microcell solutions to tough terrains throughout the county. And we will hope to increase the capacity and width so that our standalone 5G capabilities can be accessible to all. So I want to summarize this by saying that T-Mobile is a strong advocate for digital equity and inclusion, and it means partnership for us. We look forward to working on any opportunities we can with local nonprofits and our fellow internet service providers and the county as we bring digital equity and inclusion to the residents of Fairfax.

[00:33:21] There's another mantra we have at T-Mobile, and that's we won't stop. And I think that's apt for our partnership with Fairfax County in support of digital equity and inclusion, because we don't want to stop fighting until everybody has equal access, until every resident has equal access and In formal literacy and availability to the tools, this navigation process is something that we are committed to, and we thank you all for including us and letting us be a part of the conversation.

[00:33:46] Thank you, David. And last, we'll have Mario Acosta-Valas, Director of State and Local Government Affairs for Verizon. The next one. Oh, there you go.

[00:34:01] Thank you. Good morning, everyone, and thank you very much for the opportunity to be here. is certainly an honor to join all the leaders here and the supervisors to celebrate Digital Inclusion Week, but also to share with you with excitement all the great things that we've been able to do on behalf of Verizon to expand digital inclusion and help close the digital divide across the state of Virginia, but certainly here in Fairfax County.

[00:34:31] I always like to say that we are a global technology leader, but we are also a local company with a strong local presence and that's something that we are really proud to celebrate and to share here in Fairfax County. We all know how critical digital literacy and inclusion is in today's day and age and that is something that we at Verizon understand deeply. This is why we have prioritized enhancing digital inclusion in the communities we serve as part of our global and local engagement work across the country and especially here in Fairfax County. We believe

[00:35:08] that high quality access to the internet is a necessity. Even still, individuals throughout the country find themselves struggling to get connected. Verizon is on a mission to change that. We must ensure more people of all ages are connected. Over the last couple of years, Verizon has worked with many of our community partners here in Fairfax County to meet residents in their communities to promote digital literacy and inclusion. And one of the key areas which has been mentioned today is promoting the affordable connectivity program ACP. We partner,

[00:35:43] for instance, with a great organization, Capital Area Food Bank, to promote ACP during the Reston Community Marketplace program, which serves over 200 community residents every month. This past summer, we partnered with mixed income apartment complexes, including Octon Park Apartments in parliaments in Annandale to host a series of ACP and very important STEM education events.

[00:36:11] While adults learned to get free home internet with ACP, Verizon technicians led youth through enhanced STEM projects. And if you follow our corporate social responsibility practices and commitment globally, you'll see that expanding digital equity, education, and access to hands-on STEM learning

opportunities for youth is one of our stronger commitments, and that's how it is now also present here in Fairfax County. We believe that by fostering a robust understanding of STEM

[00:36:46] among youth and the importance of reliable high-speed connectivity at home opens the door to limitless possibilities for these children and their families. We have partnered as of today in more than 17 events and supported education and awareness of the ACP program reaching over 800 people over the last summer in the last few months. We've also promoted digital inclusion and literacy, as I mentioned, by supporting STEM learning opportunities for youth and communities.

[00:37:17] And another organization that we're very, very proud to partner with this year is the Rossi Riveters, a Northern Virginia non-profit organization. We have worked hand-in-hand with Rossett Riverers and other community partners to expand STEM-focused programs that inspire students to learn, achieve, and create.

[00:37:38] This past summer, V Teamers, how we call our employees who volunteer in our communities, assembled over 800 STEM kits that are currently being used in Rossett Riverers programs across Northern Virginia this fall. And this STEM and digital skill building commitment to support our communities is part of a global commitment from Verizon to provide 10 million youth nationwide with digital skills training by 2030.

[00:38:08] Finally, a digital inclusion work has expanded to support small business development. That is why we created a fantastic program called Small Business Digital Ready to share our commitment to giving entrepreneurs the technical tools they need to not only succeed but thrive in an e-commerce landscape.

[00:38:27] The program provides free online courses, expert coaching, peer networking, grant opportunities, all in both English and Spanish. In Northern Virginia, we've collaborated with the Springfield-based Women's Business Center of Northern Virginia to host networking opportunities, Q&A sessions, and ensure Fairfax businesses and business owners are aware of grant opportunities the moment that they are released.

[00:38:55] we currently have over 3,000 Virginia small businesses and business owners registered in this program. We know that closing the digital divide is a multi-pronged approach, so we must ensure business owners, students, and families all have the tools they need to not only participate but thrive in the 21st century society. Thank you again to the Fairfax County Board of Supervisors for allowing Verizon the opportunity to share the work we are doing, to share our passion for our local presence and our passion to partnering with our community organizations

[00:39:31] thank you all right thank you very very much uh mr scott all the presenters carla and evan thank you uh so much this is excellent work i do just a couple of quick comments on slide five if we could go back to that that's the slide that shows uh the various county efforts this is an amazing slide uh it really is it goes to show how there are different roles that that different entities play public and private but are so critical that build on the strengths of the different partners

[00:40:07] uh in this we do have a role on the county side absolutely but the service providers you know the the community organizations this is a collaborative effort that does require a lot of different coordination and touch points uh in order to really be effective so This is a fantastic model for that.

[00:40:26] Thank you so much for putting this together. The only other thing I would note is a lot of great discussion about access, affordability. One of the things also that I know is going on on the back end, it doesn't get as much play.

[00:40:42] It's not quite as maybe exciting, but it gets to the issue of qualification. You talked about qualification, certainly on ACP. we also have qualification issues for uh free or reduced transit uh you know we're going to that we have qualification across uh camps and child care programs we have qualification that that that ends up popping up uh across so many different things and i realize there are all sorts of legal issues and coordination issues but this is in my mind this is this is a nut that i

[00:41:18] I know we're just starting to crack so that we can truly make accessible all these different programs to our residents that qualify. So this is, I know, something else that we're working on. Mr. Scott, I don't know if you wanted to comment on that. Yeah, I just want to comment on that, working with the state. And as you look at the Northern Virginia region, the total population in the Northern Virginia region, only 30% qualify for the ACP because it's based on the medium house income for the region.

[00:41:49] So it makes it very hard. Fantastic. Mr. Chairman, go ahead. Yeah, thank you very much, and thank you all for the presentation. I know sometimes you're competitors, but you're all on the same page on this issue.

[00:42:04] And just, you know, for the record, my AT&T, Verizon, and T-Mobile accounts are all showing three bars in the room. So you're all even. But in all seriousness, I love the passion. I went back and looked at the board matter that I did in 2021 on this to really push this issue hard as part of our One Fairfax initiative.

[00:42:27] And I know at that time and in the presentation today, we saw this 90% of households in the county have Internet access and 4.2% do not. And so I just want to make sure as we enter this bead process that that still is the best information that we know at a granular level about where we are and who is connected.

[00:42:52] Is that number that we had from 2021, we feel like pretty confident that it's not getting worse, it's not necessarily much better than it was then as we head into the bead analysis? It's about the same. It's about the same.

[00:43:09] And just on that comment there, but the data that we've seen originally from the state housing, they're actually, that's where it's going to be the big challenge because they're actually hitting areas that is non-developed. One of the areas they showed was our wastewater treatment plant.

[00:43:26] And so we know that that's not going to be that. So I know that 30-day challenge, as we talked about, but we're really going to go off for our data that we have here locally and match that to the maps. Okay, because I mean, to me, that part of this presentation is so important, because we've got to know, you know, what we're making progress on and what we're not and what direction that we're going into. And I guess on that point, and I appreciate what Supervisor Alcorn was saying, because I'm hearing, you know, all the different programs. I'm sure all of my colleagues are hearing it. And even we are confused and trying to figure out what a person who already doesn't

[00:44:05] have internet access is supposed to do to try to understand what they're entitled to and what they can take advantage of and in some cases it may even depend on what part of the county that they live in who their service providers are available in that area and so help me understand how an ordinary

person who might want to try to figure out whether they qualify for any of the programs that was just mentioned what would be the first step that they would take and what are we doing as a county to message to our own county residents what programs are out there available and what their first step should be.

[00:44:41] Because I hear about the federal piece and making sure that people take advantage of that even though the qualifications may be stringent on that. Is that the first thing people should do or is there something else they should be doing? Because my concern is, and I appreciate all the partnerships with nonprofits and all the community outreach events that all the providers are participating in, because that's, you know, critical to spreading the word. But I'm still a little bit confused how organized we are in terms of a singular message for what one should be doing and what we're doing to help them get linked up.

[00:45:16] So, Chairman McKay, that's a great question, I think. If you've seen the slide here, one area is we really have leaned in on is our marketing efforts. That's why we've kind of elevated the digital equity page and the materials that go with it. So really making it clear the steps that people need to go through. I also think the education superhighway nonprofit that we've teamed up with, their marketing materials make it really easy for somebody to understand the process.

[00:45:49] And so we're really left besides that, we're also leveraging our nonprofits and really having them go out to communities and serve as digital navigators. So it's really clear the first thing somebody has to do is actually sign up for the ACP program. Once they're accepted into that program, then they can go to any of the providers and share that information with them. Where we're really lucky here in Fairfax is our providers also do ACP recruitment. So they can walk any resident through signing up for ACP, as well as then registering them with their program.

[00:46:25] So, for example, yesterday, the woman I discussed, she was at an event, got her laptop, and then right on the spot, the Minority Tech Foundation could help her register and get approved for ACP. And so I think that strategy of moving forward, of really making sure we're clear about the process, which I think you're tracking on, and making sure we have the materials in all different languages for folks on how to do that will be effective strategy moving forward yeah i think that's i think that's really important and i know i want to acknowledge we've come a long way

[00:47:01] on this i mean i it's easier now than than ever but i know that it's still a challenge and you know the county's in a difficult position of not appearing to endorse any particular provider or program but we also have the obligation to make sure our residents know you know what is available to them out there. And then just as a quick follow-up, and I know Carla wanted to say something, if one doesn't qualify under the ACP program, they're denied for whatever reason. There are other programs that they may be eligible and available to be able to take advantage of. And

[00:47:37] so that's part of the messaging as well. Yes, it is. Okay. Carla? I just wanted to emphasize that we have our specific technology-focused partners here, but we are also working really closely with our existing network of nonprofits and really emphasizing that digital access is a basic need in the same way that food is a basic need and housing is a basic need in the 21st century, just digital access. So our way for connecting to the community is connecting through our existing nonprofits and really incorporating, you heard our partners talking about sort of who they're working with, really connecting with people on the ground level who are working with the most

[00:48:14] disadvantaged people in our community every day and understanding how significant it is that they emphasize digital connectivity in the array of supports that people need to be successful in Fairfax County. Yeah, I really appreciate that because none of us in the county would tolerate if we knew a household unit didn't have connection to water or didn't have connection to power. And honestly, I think the importance of treating this that same way is in terms of an essential utility for success is absolutely the approach we need to take.

[00:48:47] So thank you. And the other thing we're going to have to keep close eye on is some of the new grants that are coming out, like the one we listed here, the VATI, that's either going to go to community-based groups or it's going to go to local government. So we just have to make sure that we're staffed up to take advantage of that and get those opportunities.

[00:49:04] Go after it, Greg. All right. Thank you very much. We're going to start down on this end. Supervisor Paulczyk? Yes, thank you so much, and thank you so much to all of you. I know many of you have been doing this work or related work for so many years, and others who are here with us today, I feel like we need a competition.

[00:49:23] We've got, like, who can do the most, right? And so I really appreciate that, especially, I think, through the pandemic, we have seen more and more of the need both to make it easier to access existing programs and also to expand those. So first of all, just a couple of comments.

[00:49:40] Absolutely, the digital divide. As we're sitting here, I love hearing digital navigators, because I was thinking health fairs and health navigators. And absolutely, we can create programs. But unless we're partnering, A, with trusted bodies, including our nonprofits, and ensuring that we are helping people through that, whether it's due to age, language, or other barriers, or comfort, I think it's just so critical that we ensure that.

[00:50:12] And I think a few of us having come from the school board and having had these discussions before for our schools, knowing this is one of the areas where schools can't do it alone, right? We absolutely need to continue to partner, both on providing the hardware, but also the software and the connections and the speed.

[00:50:30] I appreciate that speeds are included here, because it's one thing to provide a connection. It's another to have it a speed. I mean, 25.3 feels like-- Why even have internet at that point? But so I guess my questions number one would be at the state level.

[00:50:49] So it sounds like a great program, but there are a lot of devil in the details, I think, in some of those. So I don't know if, you know, our staff have a little bit more information about, you know, how really what we're seeing and where it will be focused.

[00:51:07] And I know you shared a little bit, but like internet speeds, if you could share a little bit more about where we see, will that actually impact us and where? And I guess my other question is, we're hearing so much being done. And again, is there, what else can the county be doing at this point, right?

[00:51:22] There are so many players, private, public, state, federal, local. Is there, what else could we be doing or what role should the county really play in helping ensure from tracking to providing support to these navigators that we are impactful in navigating grants and everything else to really move forward on this?

[00:51:46] Well, I think I'll address the state question first. I think the state has been really helpful for us in regards to just giving us guidance and technical support. I think our regional partners here had a chance to have a listening session with the state in September.

[00:52:10] I think that was really important because I think the state for a while was thinking about the rural areas and just really reminding them that our urban areas and places like Fairfax have needs as well. So I definitely think that's going to be a role for the Board of Supervisors is to continue educating the state about our needs up here as those funding opportunities become available.

[00:52:32] And I do think the state is thinking about speed, so there has been some discussions as more funding becomes available and providers get funding for this that they're going to have to have a commitment to certain speeds and communities if they want that funding.

[00:52:51] So I think there's some discussion about tying that funding in there, and so I think that's really important. And I think to your latter question about what more can we do, I think the continued coordination and really making sure we're elevating our nonprofit organizations and the work that they're doing is really important.

[00:53:13] So I see those as two critical areas. I also think at some point it will be helpful if we can really lay out a specific action plan of where we're moving forward. And I think now that we have, I've really established this coordinating team of people who are working together.

[00:53:31] We can get to work on doing that action plan and bringing that back to the board. And the speeds, you're normally just the minimum amount of speed that has to meet the federal grant requirements. So that's what they always aim for in the city, that high level of speed.

[00:53:47] All right. Well, hopefully it's enough for kids to do their homework, to be able to participate, and for our small businesses to be able to use them. So thank you all. And I love the action plan, because this is what I'm wondering. We have so much here, and then how are we moving forward? What is the action plan, and then how do we track that?

[00:54:03] Thank you, though. Excellent step forward. All right. Thank you. Supervisor Faust. Thank you. The action plan is pretty much where I was going to go, and I'm not sure where you're at in terms of development of a plan or how all this is going to come together.

[00:54:20] So I think now that we've kind of established the coordination team, Our next work is going to be working on the action plan and really launching that. I think it took us a moment to kind of really build relationships with the various partners and make sure we were all collectively in agreement in regards to where we want it to go.

[00:54:41] But I think that's our next step is really working on the action plan and then really gearing up for the BE process. Okay. The FCPS is not at the table here, but I'm assuming they are at the table in terms of your efforts?

[00:55:01] Yeah, they've been a great partner with us. We just, about a few weeks ago, did an ACP training with all their parent resource centers, just really informing them, but we are really working with them. They're on our coordination team.

[00:55:18] Unfortunately, they couldn't be here today, but they will be joining us at the summit, but they're definitely committed to doing this with us and understanding that we have to do this collectively.

Okay. And your former profession, the senior centers, that to me is a place where you really want to focus. Is that something that's happening here?

[00:55:42] So the RF Office on Aging has been wonderful. We are really leaning into them. They have an IT program, on-call IT program, that we're really leveraging where they're going into homes and providing IT support seniors.

[00:55:58] so we've really educated those volunteers and at all of our senior centers they're hosting events this week just raising awareness so we are really keen on that older adult population and making sure that they have the skills I think in two areas one the digital literacy and then I think compared maybe to other populations around safety and them being on the internet and really just in tune with making sure they have the skills to make sure they're not going to get scammed or anything's going to happen to them. Then my last one, we keep hearing

[00:56:34] $1.4 billion and get excited, of course. But what does that mean to us? I mean, number one, what is it for? And if we were to get our hands on it, what would we use it for?

[00:56:53] So I think that's a great question. I think it would be the first phase that we're really focusing on is making sure that we have the actual connectivity in the communities. And so in my mind, in the slide, we talked about these affordable dwelling units. And so I think we have some work to do during that challenge period to make sure the right connectivity is there. If it's not, then we have an opportunity to challenge that and put that on the map. So that's the first phase, is the first amount of funding is going to go towards infrastructure, making sure you have broadband and connectivity in areas. So we're going to be focusing on that. Greg's really

[00:57:33] has his team ready to go in regards to that. And then the second phase of funding is towards affordability and adoption. So really preparing for that. So I think state is open to hearing proposals around affordability and adoption for communities. And then the third piece of funding is going to go towards digital literacy programs.

[00:57:56] So I think that first area, we really got to make sure. I think we have an opportunity here to get some really good funding if we identify locations that we have. You may know this already, but, you know, you have your committed affordable and then you have your market affordable.

[00:58:12] And we actually are, the housing staff is identifying the market affordable throughout the county and that that would be an excellent place for you to focus and we're really connected with them right now on the work to make sure the housing yes they're a partner with us on this great thank you buddy yes a vhcd at the eight level is coordinating all the digital equity work and so our local housing and community development has to be our partner in terms of paying attention to when funding is available and we're also working with them to

[00:58:50] understand what properties both the ones that are sort of county-owned but also privately owned affordable housing exists so they are and will continue to be a really close partner in this effort all right Supervisor Lusk thank you mr. chairman I'll start by saying I'm so excited to see the evolution of this I still remember that first conversation and to see how far this has come so I appreciate the three-legged stool to having the public sector of the private sector and the not-for-profits all kind of join together this is how we make things work

[00:59:26] so the beauty here it's got a great model um I wanted to probably ask you Greg a couple questions I know you mentioned there's been like a 50 percent increase in the participation in our program can you share any data or demographics around that 50 percent increase where are they from who I turn it over to sure and that ACP program and then we can come back and give you some additional information on that supervisor and if it would be possible I'd love to kind of have it cordoned down to even my district just to get a sense of kind of what's the kind of

[01:00:06] baseline for me in terms of that 50 percent um I'll also ask Greg I know you mentioned I think before we were talking about like trying to boost out boost out from some of our facilities um our capabilities for Wi-Fi and broadband access. Can you tell me what have we done since that conversation? Where are we now as a result? I think we've done quite a few buildings. I think we've still got about a maybe a list of about 48 or so that's still yet to be done and we're working through that list. But yes, any public for any of the county's own buildings, we're making

[01:00:43] sure that there's penetration on the outside for Wi-Fi. So what that means is people who are outside the building can actually kind of drive up and get connected directly from the outside of the building. They don't actually even have to come into the building, so I'm clear on that.

[01:01:00] And then with working with our partners, the other initiative that you'll hear about is that as we're looking at the DAS within our buildings is to put in a neutral host DAS, which allows all carriers to run off of that DAS, and that also will provide additional coverage for individuals as well. So I'll say here, too, it might be helpful for, I guess, all of us, but I'd be interested in knowing which facilities, even in my district, are, like, up next. What's the kind of the program and the protocol? I will work with our GIS department so we can actually

[01:01:34] map that. And that's for all districts, everybody. I was going to say for all districts. I think that makes sense. Yeah, I'm making the case here for everyone, but just making sure. And then I I just appreciate the conversation about the Department of Housing.

[01:01:52] I'll just remind us all, because since I have the highest number of mobile home units in my district, I'm always sensitive to making sure we're doing things to try to support and help them. So I just want to add that to the list if that's possible as well, looking at the mobile home communities and their ability to have access as well.

[01:02:12] And the last point I'll just say is I've had the opportunity to work with your nonprofit partners. So Donna Walker, I see you in the back here, and then I see Sean Brayboy here as well. So you guys have been great in the work that you've already done.

[01:02:29] So I just appreciate seeing you expand your work in the broader communities as well. So thank you very much. I just want to add one thing. I think eventually I'm looking at the providers here. that we do have some providers now that are providing free Wi-Fi in certain communities.

[01:02:51] Tysense is a good example of that. So I do think we've been in discussions with the providers about other areas, maybe eventually that we can look at that can afford that same opportunity. And I'm hopeful, especially with them around the table, that maybe we can find some opportunities.

[01:03:13] All right. Thank you. Supervisor Gross. I'm hoping we will get to the GIS discussion. I know Greg is watching the time go away because there's some really exciting stuff there. But this question, I think, is probably directed to the industry.

[01:03:30] And we've talked a little bit about speed. But increasing speed, I liken it to, well, the water pressure, the water issue that the chairman mentioned. You know, if you don't have enough water pressure, you're going to just have a trickle.

[01:03:48] And I'm concerned that that's what's happening without really increasing speeds. We're going to increase opportunities. We're going to increase access. But if we've still got slow speeds, it's going to be frustrating to everybody. So what is the industry doing, probably with the federal government, to increase speeds?

[01:04:07] Because that's one of the concerns we have, I know, in Annandale, that the speeds aren't fast enough for businesses to locate there. So I'd turn that question over to our industry folks. I would just say that all of our fastest speeds are available in every single part of the county.

[01:04:25] So I'm happy to work with you on anything in your district. And sometimes we run into issues where wiring in a building is an issue, and we are happy to work with building owners to help them upgrade their wiring because you could bring a fast pipe to their door, but it may not go through to the tenants or the small businesses if the wiring is poor inside.

[01:04:49] Thank you. That's a very good point. I think that maybe we hadn't anticipated because you can get it to the door, but if you can't get through the door, it doesn't work. Okay. I think that's something we really need to look at. Access, you know, we've got this program all set up, but if we can't get the sofa through the door, we're stuck. Thank you.

[01:05:11] Supervisor Gross, I think your point's a good one. That's why that exact question we're asking around these affordable dwelling units? The connectivity is there, but is it getting through the walls? And that's where that first phase of funding for BEAT could help with.

[01:05:28] All right, very good. I do have one final follow-up on this topic, and then we're going to see if we can do a few minutes on GIS. Our higher education institutions, GMU, NVCC, are they partnering? Are they a part of this as well?

[01:05:44] Yes. So George Mason University right now is going to be part of our coordination team, and we're waiting to connect with the Northern Virginia Community College. But George Mason's already agreed to be part of that. They'll be joining us at the summit on Thursday. Fantastic.

[01:06:00] Okay. Thank you all so much. Excellent presentations, and thank you so much, county staff, for making this happen. Okay. I think we've got, if we could maybe have a five- or ten-minute presentation from Mr. Little, if he's ready, or Mr. Scott, what do you recommend?

[01:06:16] Because we do want to try to get out of here for lunch, frankly. Mr. Chairman, Mr. Chairman, as a former chairman of this board said many, many times, we can listen as fast as you can speak. Okay, I'll get them to the table, and we'll try to do a high-level highlight of what we're going to present.

[01:06:39] That's great. And while they're setting up, I do want to just recognize somebody here that, well, he's not listening right now. But I think we all know that our county executive was in NACO's meeting this past week talking about artificial intelligence and counties.

[01:07:00] And we just wanted to recognize, Brian, for your work on AI through NACO. And thank you very much for your leadership position, obviously not just in Fairfax County, but nationally on that in terms of how AI can really help us all do things better.

[01:07:21] So thank you very much for that. So here's a segue. I think we're going to be seeing in this presentation some subsets of AI that actually will sort of bring that together with things like trees, right?

[01:07:37] All right. So, Mr. Little, take it away. Thank you very much. Yeah, Mike. Okay, thanks. Then a while since I presented it here. Thanks. So good morning. Thank you very much. I had some highlights I really wanted to talk about, about some of the things that we're doing with our remotely sensed products and the derivatives coming from them.

[01:08:00] I think that's something I could probably pick up on another day. But I'm Mike Little. I'm the director of GIS. I've been with the county for about 25 years. I'm here with Greg Bacon. He's our senior analyst. He's also our remote sensing data and techniques specialist as well.

[01:08:17] He's got a really interesting presentation that I really don't want to stand in the way of. And so I'm going to let him go ahead and get started on that. It's a presentation that's going to show you really a real world applied example of the use of generative AI to solve problems in county business and in particular inform an environmental program.

[01:08:40] So, Mr. Bacon, I'll hand it to you and let you introduce yourself. Oh, just push the button right here. Oh, there it is. Okay. Thanks, everyone. Hi. I'm Greg Bacon.

[01:08:56] As Mike mentioned, I'm a senior analyst with the GIS and Mapping Services Division. Last week, I just celebrated 11 years with Fairfax County. I've been doing GIS and remote sensing for about 18 years now, a mix of federal government, private consulting, and now here, my absolute favorite, local government.

[01:09:16] So I'm going to take you through a little bit on some of the deep learning tools that I've been using to extract land cover. We'll talk about what that is and what the county uses it for. And then a very specific application where we'll be looking at finding evergreen trees to prevent pest infestations throughout the county.

[01:09:36] So a little bit to follow, we'll get into deep learning just in a general context inside of GIS, how we use it. and and what it really means then my two examples land cover classification and evergreen tree detection and then some some parting thoughts on on where this is going to go for the county and some things we'll need to consider i promise this will be the only time that i'll read to you this quote on this slide deep learning has been around in gis for several years now becoming more and more popular and this really encapsulates it well if you're wondering who esri is that is the software vendor that provides all the gis software that we use and a lot of the server

[01:10:15] infrastructure behind it. And what we're really talking about in this Venn diagram, when we get down to deep learning, that kind of subset of artificial intelligence, we're looking at, quote, the spatial component often takes the form of some measure of shape, density, contiguity, spatial distribution, or proximity. GIS is all about maps and things and their relationships to each other. And so I think that does a pretty good job. What we hope to get out of it are these four items below. Sometimes it's a mix of those things. We're looking at prediction. Where might things happen based on what's happened in the past? Classification, like we'll talk to today. I'm

[01:10:54] looking at an image. Tell me what it is and how we can map that. Pattern recognition and clustering. Best example I can think of for those two in recent history, we hear a lot about crime. You know, density of areas where crime happens. Can we predict where it is likely to happen otherwise.

Clustering also, unfortunately, COVID-19, epidemiology is all about clustering and spread. So we're really looking at solving spatial problems by using some mix of those four things. So I'm going to focus a little bit more narrowly on when it comes to imagery, aerial

[01:11:32] photography, satellite imagery, what can artificial intelligence do. So I have four examples of some models here that do very, very specific things. They're not very versatile. They are good at one thing, and that's what they were designed for. You'll notice, too, some are built environment, like the building outlines that I have here in the top, as well as the solar panels. Pools are another one that AI is very good at finding. And then the natural environment, where I have the two start examples I'll be going through today, one of which is land cover, showing you what that is and how it's used, and then tree detection, you know, drawing boxes around trees so I can

[01:12:10] start to discriminate between different types and help our urban foresters find the trees that they're looking for. So the way that this works, Python is a scripting language, and it has some very specific libraries that I can access for GIS tools. And they have funny names, like I've got a few up here, like UNet, Deep Forest, very fitting, and Mascar, CNN. Anytime you see something like NN at the end of one of these, you may have heard the term neural network. That's usually what is going on here, and that's a classifier that works much like the human brain to make decisions

[01:12:44] on what it is it's looking at and trying to categorize for us. These models typically require large, as an understatement, I would say vast amounts of training data. To train a computer in an image, what is it looking at? It needs hundreds, if not thousands, of examples so it can recognize it when you feed it a new image. But recently, some pre-trained models have been released by Esri and there are other companies out there doing this where that work has been done for us. And that's why they do only very specific things. And a person like me is just left with

[01:13:19] finding imagery that is very similar to what it was trained on to go ahead and say, yes, this has the same characteristics that should give me a successful outcome. So before I talk a little bit about land cover, who wants it and why, I thought I would talk a little bit about what it is. So the image that you see at the lower right is an output land cover data set overlaid on the aerial photograph from which it was produced. So this is a county-wide data set, all 410 square miles, and over a billion pixels classified into these categories. So when I say pixels, it's just like

[01:13:55] your digital camera. You zoom in far enough, you'll see the squares that make up the image. These images are no different, and they're packed with information that we can extract using these deep learning algorithms. And what it's done here is it's classified all of the pixels in the image into one of nine categories that a computer can recognize and then start to count and tally and give us things like 54% forest in Fairfax County. Those are the kinds of things that can answer.

[01:14:25] So we have a lot of county users on the left of this slide that use this data. It's actually spreading, much to my joy over the past 11 years, into other agencies that are really finding that this does a lot for them as they want to start running their own calculations. So what this is really good at is putting an area over this image, let's say it's a watershed, to look at how much impervious surface or forest is within it because those things affect watershed health. Or you can have a little competition amongst yourselves whose supervisor district has the highest percentage

[01:15:03] of urban forest. It's really up to you. But the little word list that I have here is really talking about just the things I could think of off the top of my head that this has been used for. Vegetation

management and so forth is really kind of where it began. But now DPW is using it even for equity. You know, where should we plant trees to benefit people that maybe don't have a lot of trees? Just really kind of your imagination is the limit. So the way that this works is for this one, I have a free, I might point out, image that U.S. Department of Agriculture flies about

[01:15:42] every three or four years around here from a program called NAEP, the National Agricultural Imagery Program. They fly it in the summer, so we have full leaves on the trees. A lot of the imagery that we like to get, I know you've probably seen, has the leaves off, but we want to see that full tree canopy. What I do is I access these tools that pull from those Python libraries and start running actually on the graphics card of my machine get to that in a few slides about why that's important and it puts them into the categories one through nine that I had mentioned and that way you have the whole county a couple billion pixels showing you what classification

[01:16:22] we have so if I zoom in on the government center we see that you know I've got these nine classes here from water all the way through different types of impervious surfaces grass and trees those are each encoded with a value now that I'm basically totaling those pixels anytime I cover it with a watershed. All it's really doing is calculating the area and then the relative percentages of those land cover types within it. So that's what makes this data set so valuable.

[01:16:53] Turning more to the evergreen trees, so even about two years ago I wasn't able to say yes to urban forestry when they came to me to ask, can you help us find hemlocks? The answer is today maybe because I can help you find evergreen trees using the deep learning tools that I'll show you today. The reason they wanted to find them is these folks were early adopters, about a decade of fieldwork, to go out there and do what they do with the trees. Oftentimes they're looking at forest pest invasion like this. This one happens to be called the hemlock woolly adelgid,

[01:17:28] and it gets its name from these cotton-like tufts that you see at the ends of the hemlock needles. I've seen what this pest can do in my hometown, Syracuse, New York, and it will level those trees in a very short amount of time and they'll all be gray. So they're developing a management plan for this, a large part of which was an inventory. Well, where are they? Or at least where are the evergreens in the county so that we can go out? This is my friends, Ethan and Patrick, doing the things that they can to help those trees. They can release predatory beetles or they can inject them or both to make them immune to this sort of infestation.

[01:18:07] So that's really the goal here is to narrow down where did they go in the field. Field work is time consuming and it's expensive. So they need to get to the places where they're most likely to find those hemlocks. So fast forward to the output of this algorithm and what it did through about 3,600 acres down along the Occoquan was put a box around everything it thought was a tree.

[01:18:30] Much to Greg Bacon's chagrin, that did not tell me which ones were the evergreen trees. I said, I gave you leaf off imagery. Why don't you know this? Silly computer. So then I was left with, how do I separate these two?

[01:18:45] That's really what they need. This was 116,000 trees over 3,600 acres. So through the magic of statistics, by calculating some extra attributes for those boxes, I noticed right away that some of the evergreens were a lot smaller boxes than any others, but then things like infrared, lidar, and the greenness of that box start telling me, hey, these two things are different. Let me separate those two. So this is a short

video of Fountainhead Regional Park down along the Occoquan there, and what you're looking at on the left is a natural color image

[01:19:23] that this was trained on and classified, and I'm highlighting some areas of dense evergreens, both large irregular patches and then along a road. On the right, it's just a little bit easier to see in infrared aerial photography are those same areas.

[01:19:39] So what I'm going to play for you on the left is the output of the tool, whereas the right will come back and kind of highlight the pattern that should show up. So the green boxes here that are coming up right now, this is the set of 116,000 trees that it found.

[01:19:58] And then I was able to narrow that down to these yellow boxes which are about 26,000 evergreens throughout the area and then from that I'm able to I delivered this to urban forestry to go out if they want to create heat maps if they just want every individual tree that can be loaded on their mobile devices with the maps that they have and they can find what it is they're looking for and they can you know conservatively release those beetles or treat the trees whatever the case may be. So I had a few parting thoughts on this

[01:20:33] This is exciting because these new tools are a move toward more self-sufficiency for us. Things that weren't easily done before, we can do them faster. We can do them in-house in a lot of cases, so we don't have to hire maybe a vendor to do this.

[01:20:51] This is really the convergence of data science and GIS technology. A lot of what happens with imagery is based on statistics. So you're really mining that through a very similar process to data science, and they're just coming together more and more, so it's exciting to see data scientists be hired by the county. As someone who could brush up on their statistics, I could talk to them and probably get better assistance with something like this. This really does take high-performance computing.

[01:21:21] A lot of the calculations that go on here, this is a, we'll call it a mediocre gaming machine. The same thing that make those fancy graphics work in video games are where all the computations are done. So that's why you see companies like NVIDIA that make these graphic cards really getting into the GIS game because that's where the numbers are crunched. What I showed you took about 19 hours on our network and this machine writing just to the C drive so I could get this done. That's a long time to hope your computer doesn't end up failing on you. This is a real gem for data

[01:21:57] creation and analysis of both the built and natural environment. So I happen to focus on the natural environment because that was what I was asked to do. It's actually a lot harder to model the natural environment. So these tools are really good at discriminating between things that are otherwise difficult. But this certainly has its place in finding roads, buildings, solar panels, pools, and man-made. So it's exciting on both fronts. And the last would be that these models can be trained to look for other things I will probably take this model and train it to look for

[01:22:33] the evergreens so I don't have to do all the extra work so it's it's exciting to know that we have a way to train these models ourselves tweak the ones that already exist and and look for whatever it is the county wants to find and I would just say too that the there's additional capabilities that can be achieved with hyper spectral imagery this is multi-spectral imagery that we're using You'd be able to, for instance, with advanced models, be able to pick out specific species of trees other than just the categorically evergreen versus deciduous.

[01:23:05] So we're also using generative AI for the recently approved plantometric update program that got approved in carryover last year. And this will update all the base mapping material, the buildings, streets, sidewalks, and things like that. AI is going to be used in that case as well to help break down the costs.

[01:23:23] There's some other examples we can go into at another time. Well, thank you very much, Mr. Bacon, Mr. Little. It's great to see GIS here at the board IT committee. I'm going to call on Supervisor Gross and Supervisor Paul Cech, and we have three minutes.

[01:23:39] Just an observation. This is such cool stuff, and I use this in my office and my staff does. They're much better at this than I am. But I am thinking back at least 20 years, maybe longer, when the board received a report of what IT was doing in GIS.

[01:24:02] And my question was, can we make this a revenue-producing opportunity? And the answer was, no. It is all public information. So it would be interesting to see, you know, how much has the county invested in this?

[01:24:20] How much is it, has our taxpayer, how much have they, and, you know, what is the result? This is the result. It would be very interesting to know what that investment has been over the years, because there was a time when we all wanted to make this revenue producing, and it wasn't possible.

[01:24:39] And so anybody can access this free of charge. Is that right? Is there anything proprietary on any of this? No. I didn't think so. It's fascinating to see where we were then and where we are now. I still wish we could have made it revenue producing somehow.

[01:24:56] Thank you. All right, Supervisor Palczyk, and then we'll break. Thank you. Briefly, just want to share the excitement. This is one of those areas where investment, I think, really both puts us ahead where we need to be and also has opportunities for cost reduction.

[01:25:11] I guess my question more, all the great opportunities where it could be used, areas such as, you know, pedestrian safety and DTA, I know you've got a few agencies up there, are those areas that we could see in the short term, or are those longer, farther away?

[01:25:31] Some in the short term, and there's going to be some in a long way, because then it's all about making sure we've got the correct and curated data to make this really advanced. And I think that's critical, the correct, right? I think there's a lot of excitement, but ensuring that we continue to ensure the correct data and assessment of it.

[01:25:52] Fantastic. All right. Great. And actually, Supervisor Stork has one last comment or question. Just National Geospatial Agency, they keep wanting to partner with us and do lots of things to try to get, obviously, the tech world that resides in Fairfax County to help them make sure they get the pipeline that they need to provide the services. Do we have, have we had any connection with them? Have they, you know, is there, I think there's an opportunity there. I don't know what it is, but I just am asking in general if we've done much.

[01:26:20] That's actually where we got Greg from, from the NGA. Greg has been awesome for our fly-through for the Mount Vernon Town meeting, and anybody who hasn't seen that, that's a great use of how those things come together, but yes, let me know, let us know, obviously the chairman, Supervisor Lusk, Supervisor Herity, we all have been there, see a lot of potential. We want to make sure we're connecting

ourselves to that. Fantastic. Mr. Scott? And then one last plug for GIS. GIS day is going to be held in November. We're working on that date and so make sure that we get that out to all board offices to

[01:26:58] let you know. And that's an opportunity for us to diverge this to other agencies within the county of what we're doing. So we look forward to that day as well. Fantastic. Great presentations, good discussion, and we are adjourned.



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