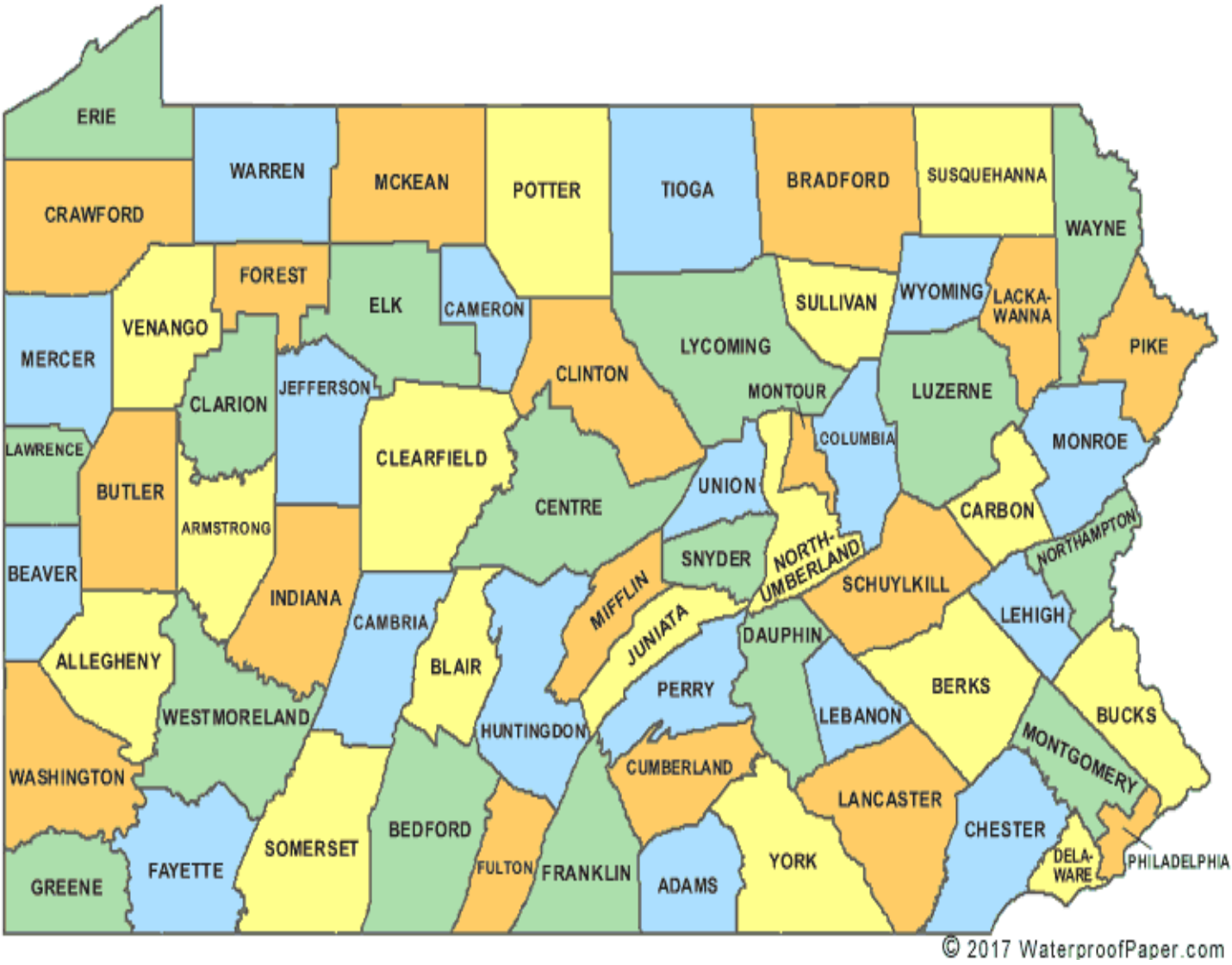

Pennsylvania State
44 Net / AMPR.ORG
IP Subnet Plan

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This plan will describe the subnetting of the IPv4 address range allocated to the amateur radio community in Pennsylvania. Currently all IPv4 addresses available to Pennsylvania are co-ordinated by Charles Hargrove, N2NOV. The latest version of this document may be downloaded from **http://HamGatePA.n2nov.net/Pennsylvania_State_Subnet_Plan.pdf**

The following IPv4 address subnet is allocated to the amateur radio community in Pennsylvania:

44.56.0.0 / 255.255.0.0

It shall be further broken down into smaller subnets so as to allow all radio hams in the state to be allocated an address that will be geographically relevant and routable. The plan is based on a "hub and spoke" principal. Each county in the state will be allocated its own subnet. A regional hub (or hubs) will be assigned numbers from their subnet and in turn the hubs will issue addresses to their users. The master hub will be called **"hamgatePA"** which will reside on the Internet. The purpose of the hubs will be to control traffic to and from the Pennsylvania network so as to meet current FCC Part 97 rules and to help prevent unwanted traffic from escaping onto an RF based LAN. HamGatePA hubs will not prevent RF based users from accessing the Internet should they so wish. Where possible all hubs will be accessible from both the Internet and a local RF LAN. Users may or may not be connected to the Internet, but will be connected via RF to their local hub. The regional hubs will be free to create any RF based LAN they so choose and are strongly encouraged to try experimental data transport methods. Data repeaters such as D-STAR, C4FM, DMR and HamNet (AREDN) are also encouraged to participate in this addressing scheme. The ultimate goal is that of interoperability. All hubs and users on the network will use the **"*host*.ampr.org"** naming convention. For the purposes of DNS entries, A, AAAA and CNAME records will be allowed and where possible MX records will be populated.

A word about IP and subnets etc:
Most readers will be familiar with expressions such as "subnet", "netmask" and "gateway" from their exposure to their cable modems at home. However, most users will not understand what these terms mean. In short, the numbers that represent these expressions describe how many IP addresses are available to the local network, how to calculate the location of any IP address and where to go if you cannot reach your intended destination address directly on your LAN.

Just like your cable modem and WiFi router, the ham radio TCP/IP network uses subnets, netmasks and gateways to navigate around hosts for the purposes of sending email, viewing the Dxcluster, etc.

Unlike your equipment at home, when you join the Pennsylvania ham radio data community you will be issued a set of numbers that will not only allow you to communicate with your fellow hams but also communicate worldwide via the Internet.

Your allocation is indeed an honest-to-goodness "real" IP address. Unlike the IP addresses you are familiar with in your home (192.168.x.x) which are repeated almost everywhere you go, your numbers are unique to you! Like all things in ham radio, the "big boys" want our stuff. There are no more IPv4 addresses available anywhere in the world and so your allocation is a valuable commodity just like your RF space. Use it or lose it!!!! (remember the 220 band in the 1990's?)

And in case you were wondering, there are PLENTY of numbers for the ham community thanks to the foresight of the original pioneers of packet radio, so please use as many as you can justify. Each of the 67 counties in PA has over 250 addresses available. More is available should the need arise.

In the event that you lose interest in our data community, your numbers will be returned to the pool held for your county and issued to the next requesting user in that county.

It's all in the numbers:
There are a little over 65,500 IP addresses available to Pennsylvania. Of that number, over 17,000 are shared among the various counties around the state leaving some 48,000 remaining should there be a need to “back fill” somewhere for a special project or for BGP. Should you have a need for more numbers than is available in your county please contact your coordinator to discuss your proposals.

The IP subnet details for a sample county is listed below. These subnets are further reduced to better fit the needs of any given county network between traditional packet messaging systems and experimental uses like VoIP and HSMM/Mesh networks. The 44 Net is understood to be routable packets to other systems by either RF/wireless LANs or the internet via IPIP encapsulation (VPN).

For example:

Greene County, PA	44.56.16.1/255.255.255.0
Subnet	44.56.16.0/24
Range	44.56.16.1 – 44.56.16.254 (max. 254 hosts)
Network	44.56.16.0
Broadcast	44.56.16.255
Gateway	44.56.16.1
AX25 Hierarchical Address	*host*.#gree.pa.usa.noam

Requestors will then be issued a smaller subnet based on the number of routable addresses needed:

/29	6 usable addresses
/28	14
/27	30
/26	62
/25	126
/24	254

The below chart shows the 14 counties of Pennsylvania with their associated IP range assignments, the National Weather Service FIPS code for weather radio alerting, the Pennsylvania county 4 letter code that is used in the AX25 hierarchical addressing template and the 1 to 8 prefixes of USPS Zip Codes in each county for NTS message routing purposes for the EPA and WPA ARRL Sections.

County	FIPS	Code	Section	Subnet /24	ZIP1	ZIP2	ZIP3	ZIP4	ZIP5	ZIP6	ZIP7	ZIP8
HAMGATEPA			**PA**	**0**								
ERIE	42049	ERIE	WPA	1	164	165						
FRANKLIN	42055	FRAN	WPA	2	170	172						
CRAWFORD	42039	CRAW	WPA	3	161	163	164					
MERCER	42085	MERC	WPA	4	160	161	163					
LAWRENCE	42073	LAWR	WPA	5	160	161						
BEAVER	42007	BEAV	WPA	6	150	151	160	161				
WASHINGTON	42125	WASH	WPA	7	150	151	152	153	154			
WARREN	42123	WARR	WPA	8	163	164	167					
MCKEAN	42083	MCKE	WPA	9	158	167						
POTTER	42105	POTT	WPA	10	158	167	169	177				
VENANGO	42121	VENA	WPA	11	160	161	162	163				
FOREST	42053	FORE	WPA	12	158	162	163					
ELK	42047	ELK	WPA	13	158	167						
CAMERON	42023	CAME	WPA	14	158	167						
ALLEGHENY	42003	ALLE	WPA	15	150	151	152	153	156	160	162	
GREENE	42059	GREE	WPA	16	153							
FAYETTE	42051	FAYE	WPA	17	150	154	156					
WESTMORELAND	42129	WEST	WPA	18	150	151	154	155	156	157	159	162
SOMERSET	42111	SOME	WPA	19	154	155	156	159				
CAMBRIA	42021	CAMB	WPA	20	157	159	166					
CLEARFIELD	42033	CLEA	WPA	21	157	158	166	168				
BUTLER	42019	BUTL	WPA	22	150	160	161	162	163			
CLARION	42031	CLAR	WPA	23	158	160	162	163				
ARMSTRONG	42005	ARMS	WPA	24	156	157	160	162				
JEFFERSON	42065	JEFF	WPA	25	157	158	162					
INDIANA	42063	INDI	WPA	26	156	157	159	162				
CLINTON	42035	CLIN	WPA	27	168	177						
CENTRE	42027	CENT	WPA	28	166	168						
BLAIR	42013	BLAI	WPA	29	159	166						
HUNTINGDON	42061	HUNT	WPA	30	166	168	170	172				
MIFFLIN	42087	MIFF	WPA	31	170	178						
BEDFORD	42009	BEDF	WPA	32	155	159	166	172				
FULTON	42057	FULT	WPA	33	155	166	172					

County	FIPS	Code	Section	Subnet /24	ZIP1	ZIP2	ZIP3	ZIP4	ZIP5	ZIP6	ZIP7	ZIP8
LYCOMING	42081	LYCO	EPA	34	169	177	178	186				
SULLIVAN	42113	SULL	EPA	35	177	178	186	188				
WYOMING	42131	WYOM	EPA	36	184	186	188					
LACKAWANNA	42069	LACK	EPA	37	184	185	186					
MONROE	42089	MONR	EPA	38	180	182	183	184	186			
CARBON	42025	CARB	EPA	39	180	182	186					
COLUMBIA	42037	COLU	EPA	41	177	178	179	186				
SCHUYLKILL	42107	SCHU	EPA	42	178	179	182	195				
DAUPHIN	42043	DAUP	EPA	43	170	171	175	178	179			
LUZERNE	42079	LUZE	EPA	43	178	182	184	186	187			
NORTHUMBERLAND	42097	NUMB	EPA	44	170	177	178	179				
MONTOUR	42093	MNTR	EPA	45	177	178						
UNION	42119	UNIO	EPA	46	178							
SNYDER	42109	SNYD	EPA	47	170	178						
JUNIATA	42067	JUNI	EPA	48	170	172	178					
PERRY	42099	PERR	EPA	49	170							
CUMBERLAND	42041	CUMB	EPA	50	170	172	173					
LEBANON	42075	LEBA	EPA	51	170	175	195					
LEHIGH	42077	LEHI	EPA	52	180	181	189	195				
BERKS	42011	BERK	EPA	53	170	175	180	194	195	196		
BUCKS	42017	BUCK	EPA	54	180	189	190	194				
TIOGA	42117	TIOG	EPA	55	169	177						
BRADFORD	42015	BRAD	EPA	56	169	177	186	188				
SUSQUEHANNA	42115	SUSQ	EPA	57	184	186	188					
WAYNE	42127	WAYN	EPA	58	184	188						
PIKE	42103	PIKE	EPA	59	183	184						
NORTHAMPTON	42095	NHAM	EPA	60	180	181	183					
ADAMS	42001	ADAM	EPA	61	170	172	173					
YORK	42133	YORK	EPA	62	170	173	174					
LANCASTER	42071	LANC	EPA	63	170	175	176	193	195			
CHESTER	42029	CHES	EPA	64	175	190	193	194	195			
MONTGOMERY	42091	MNTG	EPA	65	180	189	190	191	194	195		
DELAWARE	42045	DELA	EPA	66	190	191	193					
PHILADELPHIA	42101	PHIL	EPA	67	190	191	192					
SPARE 1			**PA**	**68 /22**								
SPARE 2			**PA**	**72 /21**								
SPARE 3			**PA**	**80 /20**								
SPARE 4			**PA**	**96 /19**								
BGP			**PA**	**128 /17**								