Approaching the End of IPv4

…What will the afterlife hold?

Andrea Cima | RIPE 77 | 17 October 2018

RIPE NCC IPv4 Pool — Last 36 Months

Legend:
- Millions of IPv4 Addresses Reserved
- Millions of IPv4 Addresses Available Outside 185/8
- Millions of IPv4 Addresses Available in 185/8
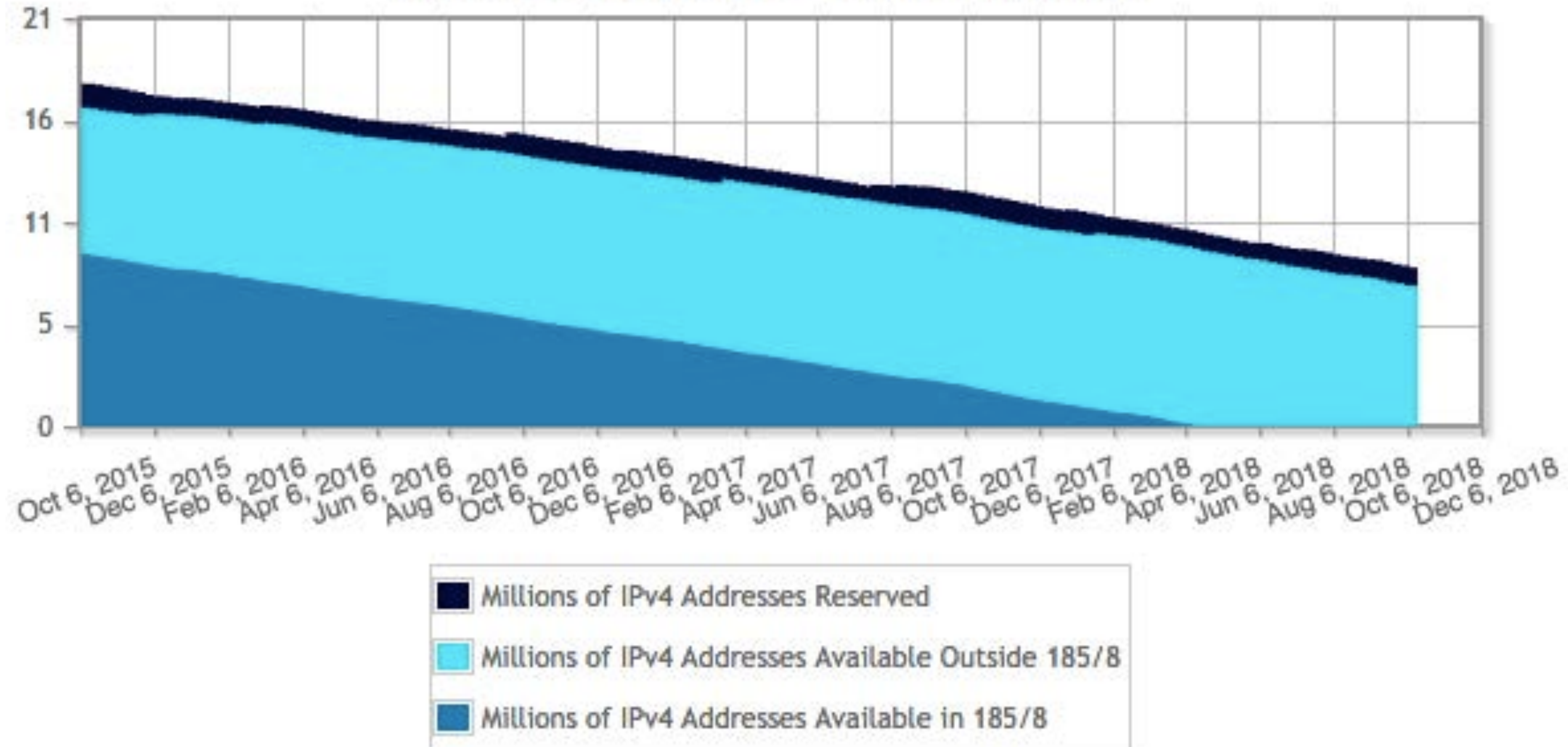
Only 6,000 /22s to go…

The Process

- **First come, first served - as usual**

- **Allocation based on prefix availability**

  1. One /22 per LIR (±5000)

  2. Combine /23s and /24s to make one /22 (±1000)

  3. One /22 per LIR from the /16 set aside for unforeseen circumstances (ripe-708)

  4. Exhaustion of the IPv4 address pool

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Unforeseen Circumstances Policy

"*A /16 will be held in reserve for some future uses, as yet unforeseen*" (…) "*In the event that this /16 remains unused at the time the remaining addresses covered by this policy have been distributed, it returns to the pool to be distributed*"

- **Currently a contiguous /16**

- **Will be replaced by /23s and /24s (totalling a /16) once PDP timelines do not allow for related policy change**

IPv4 Dust

- **The little bits that will be left over**

- **/25s, /26s and 27s (less than 6,000 IPs)**

- **Not really suitable for routing purposes**

- **We want to keep them reserved for the time being**

Returned IPv4 Addresses

What if we try to keep things simple?

Proposal: Waiting List

- ## For LIRs that haven't yet received a final /22

  - Applies to new and existing LIRs as per current policy

  - May receive a single /22 or the equivalent (prefix not larger than /24)

- ## No policy changes would be required

- ## Returned IPv4 blocks quarantined for six months before distribution

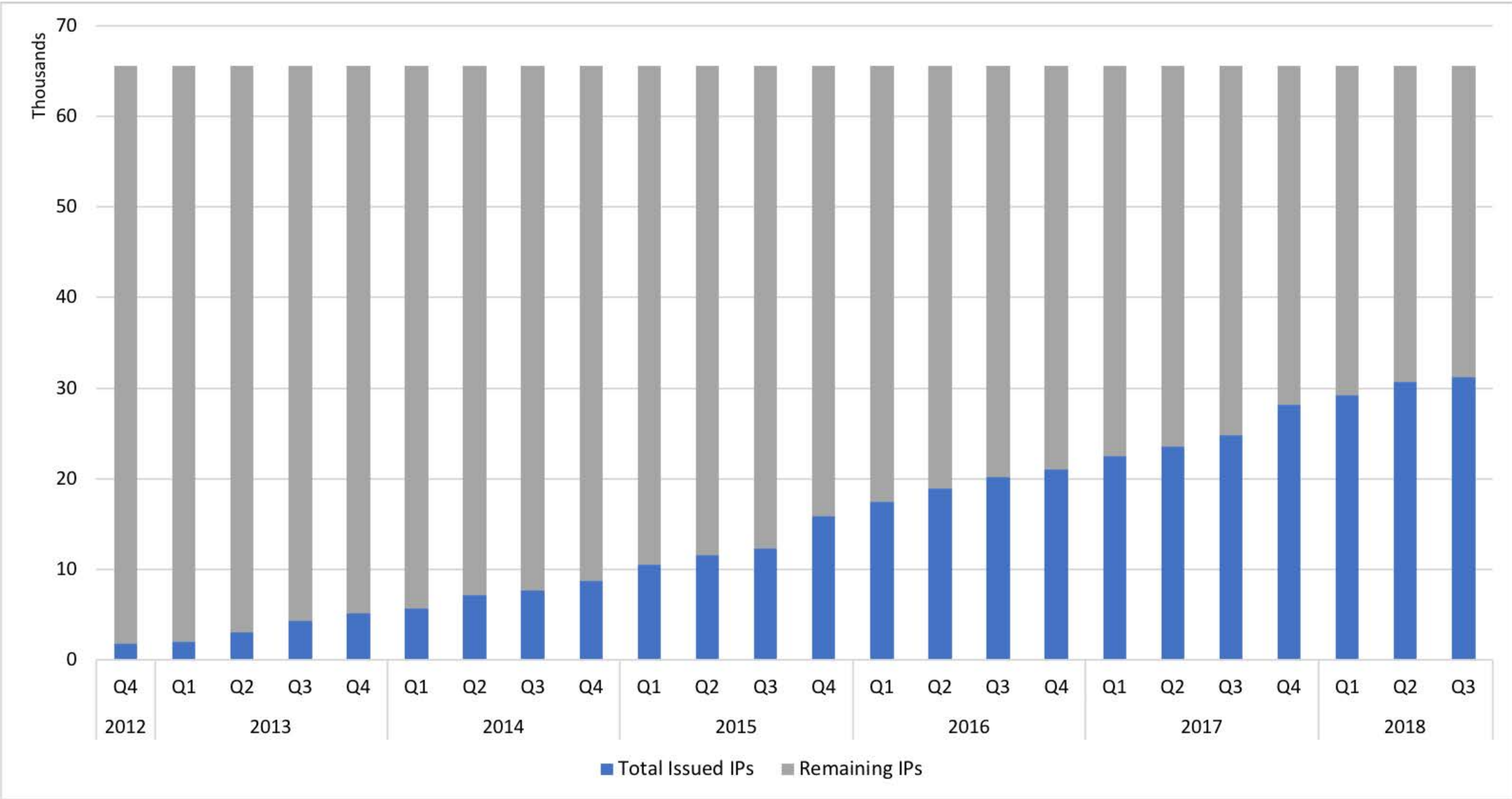 - As per current practice, this allows for proper clean-up

Thoughts on Policy

Questions and recommendations

IPv4 Pool for Internet Exchange Points

- A /16 is held in reserve for IXPs (ripe-708)

- This might be gone in less than five years

- Is the IXP pool large enough?

IXP IPv4 Pool Utilisation

# IXP Pool and Assignment Size

- ## What about moving small blocks (/25, /26) to the IXP pool?

  - Diminished routability won't affect peering LANs

  - Text should be added to the "recycling" section of ripe-708, stating that returned IPv4 blocks smaller than /24 will be added to the IXP pool

- ## "*An IXP will receive one number resource (/24 to /22)*" (ripe-708)

  - Does not allow assigning small blocks, which could be of use to IXPs

  - A policy change would be needed for this

What If We Used /24 Allocations for the Waiting List?
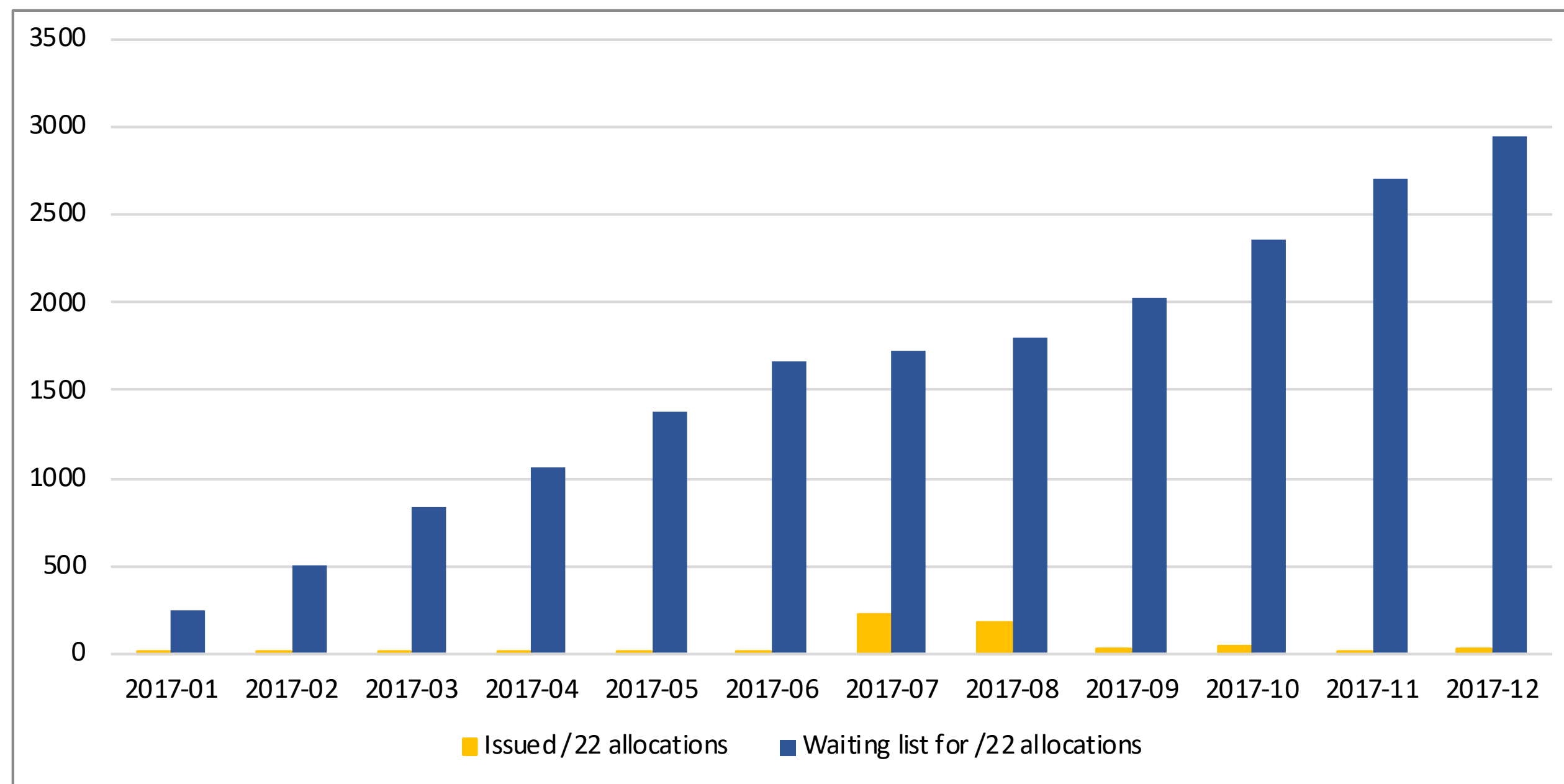
Model with /22 allocations
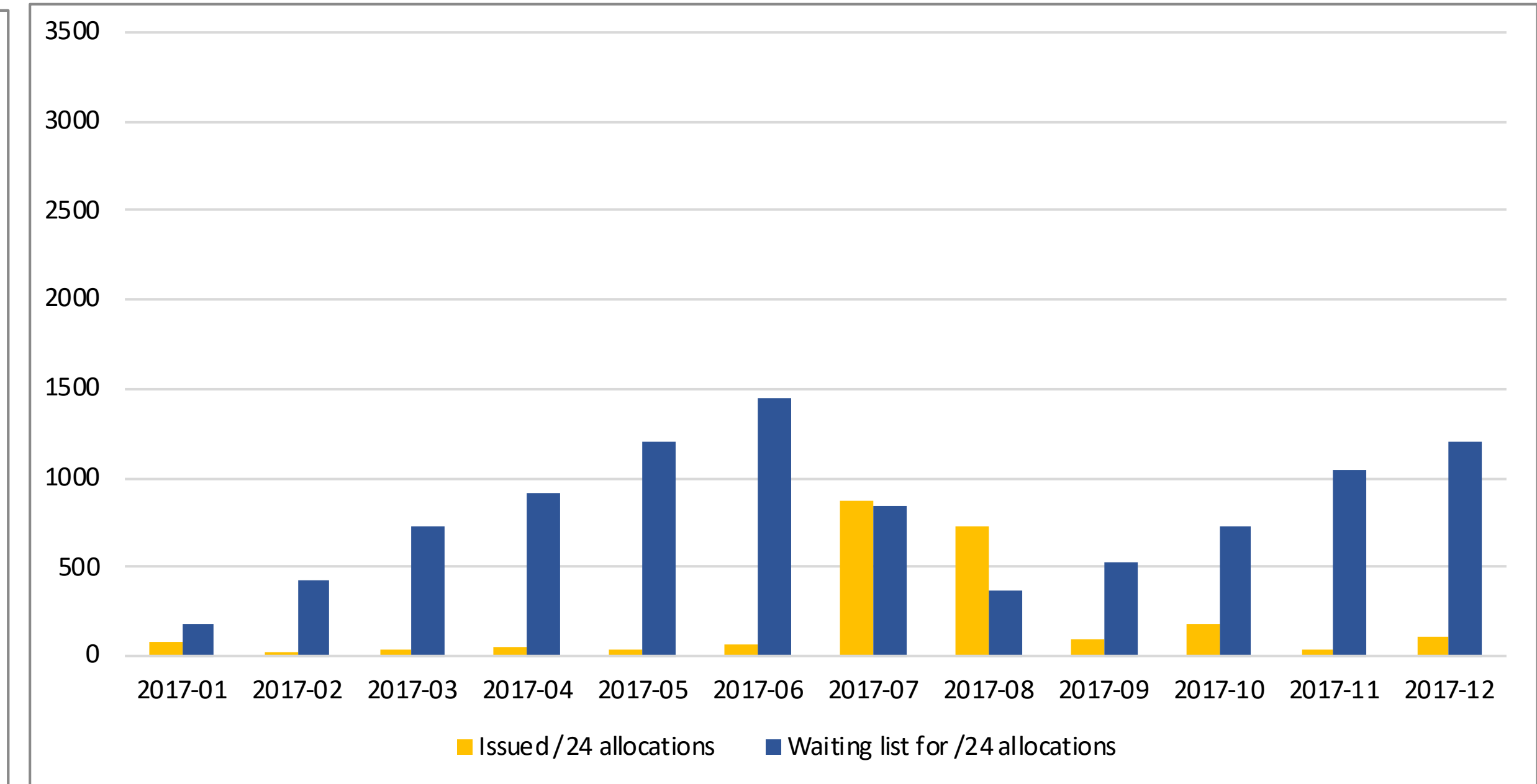
Model with /24 allocations

IPv4 Allocation Size to /24?

- **/24 allocation size policy proposal discussed last year**

  - Did not reach consensus

- **Reduction in allocation size allows for wider distribution**

- **Shorter waiting time**

- **Would make the waiting list less attractive for speculators**

Questions

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Discussion

- **Replacing contiguous /16 for unforeseen circumstances to /23s and /24s totalling /16 - any opposition?**

- **Creation of a waiting list - any opposition?**

- **IXP pool size - is this large enough?**

- **Moving blocks under a /24 to the IXP pool and allowing for their assignment - worth it? And if so, any volunteers?**

- **/24 Allocation size - worth it? And if so, any volunteers?**