

Post Quantum Cryptography Rollout to External Stakeholders

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Disclaimer: While materials are current at the time of publishing, applicable requirements may change. PJM Governing Documents control.

Quantum Computing Risk

- Traditional asymmetric encryption (e.g. RSA 4096) is strong today against classical computing threats.
- Rapid advancements in quantum computing could enable the breaking of widely used traditional asymmetric cryptographic algorithms as early as 2029.

The “Harvest Now, Decrypt Later” Risk

- Adversaries are currently collecting encrypted data, intending to decrypt it once they have powerful quantum computers.
- Data encrypted today that needs to remain secret for 5-20 years is already at risk from future quantum-enabled attacks.

PJM Approach

- Transition external facing web applications and APIs to **TLS 1.3** to simplify protocol negotiation, remove obsolete cryptography and improve performance.
- Leverage TLS 1.3 to deploy a **hybrid key exchange** that maintains strong security while transitioning to **post-quantum cryptography**.
- Establish TLS 1.3 as the preferred protocol, while continuing to support TLS 1.2 to ensure **backward compatibility**, with gradual TLS 1.2 retirement aligned to industry guidance and stakeholder readiness.
- External stakeholders may need to update client software to gain the benefits of the transition.
- *Monitor public PKI and browser support for **hybrid certificates** and when broadly supported, will transition to hybrid certificates through the existing certificate renewal process.*

Action Required

Deadline

Who May Be Affected

Update clients to support Post-Quantum Cryptography (PQC) as applicable.

<https://www.pjm.com/-/media/DotCom/etools/security/tls-1-3-transition-guide.pdf>



TBD, PJM will enable PQC with backward compatibility initially



Participants who use PJM’s internet facing applications and use standard encryption on their clients.

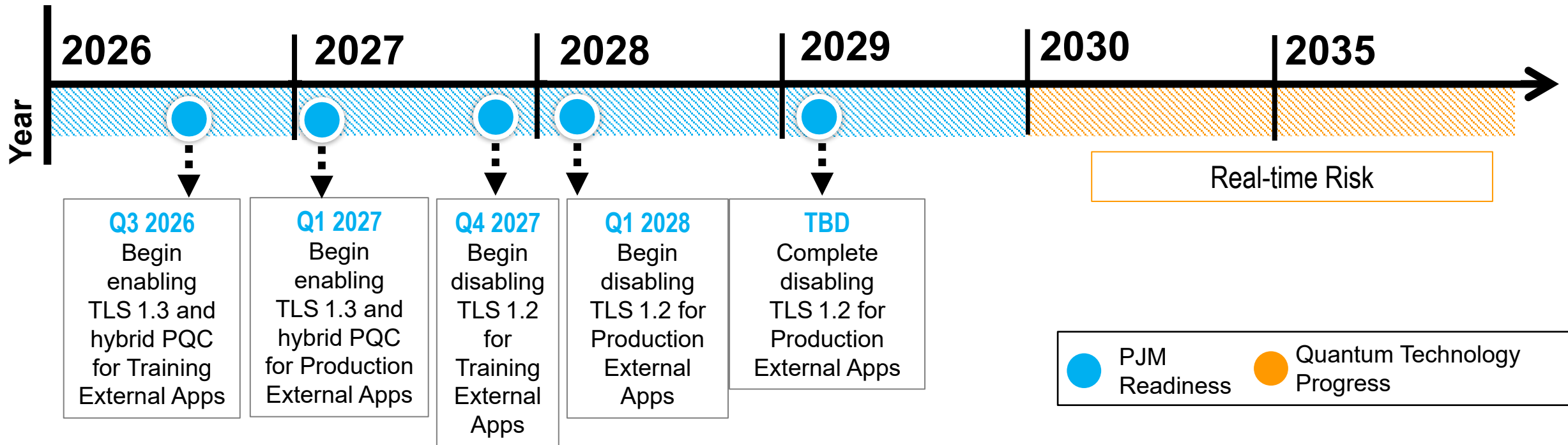


Harvest Now, Decrypt Later Threat

Encrypted data captured today may be decrypted in the future using capable quantum computers

Quantum Threat Realization

Capable quantum computers become available



1	2	3
Quantum computers present a current and future threat to the unintended disclosure of member data	To protect member data, PJM will roll out support for PQC on external facing applications	Participants may need to update clients to gain the benefits of quantum resistant security

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Post Quantum Cryptography

A green speech bubble containing a large black question mark, positioned above a blue speech bubble with three horizontal lines, which is in turn positioned above a large yellow circle containing contact information.

?

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