Kairos Power

REGULATORY ROUTE TO COMMERCIAL NUCLEAR DEPLOYMENT

THE DRIVER'S SEAT: TAILORING THE ROUTE YOU TAKE

JUNE 2021

Peter Hastings

Vice President of Regulatory Affairs & Quality,
Kairos Power

Mr. Peter Hastings is the Vice President of Regulatory Affairs & Quality at Kairos Power and leads teams responsible for licensing and permitting activities, safety analysis and probabilistic risk assessment, quality assurance, and government affairs with a focus on establishing the regulatory basis for Kairos Power's reactor technology.

Mr. Hastings previously ran a successful management and regulatory consulting firm and held prior positions as Director of Licensing and Regulatory Affairs for Generation mPower, Licensing Manager for Duke Energy's Nuclear Plant Development Division, and licensing and design-center lead NuStart Energy Development, LLC. Mr. Hastings' background includes work as a reactor engineer responsible for startup testing and fuel performance monitoring, design engineer on the Monitored Retrievable Storage facility, manager in safety assurance and performance assessment for the Yucca Mountain repository, and licensing manager responsible for receipt of construction authorization for the MOX Fuel Fabrication Facility.

Mr. Hastings earned his B.S. in Nuclear Engineering from North Carolina State University. He is a registered professional engineer in North and South Carolina.

Kairos Power's mission is to enable the world's transition to clean energy, with the ultimate goal of dramatically improving people's quality of life while protecting the environment.

In order to achieve this mission, we must prioritize our efforts to focus on a clean energy technology that is *affordable* and *safe*.

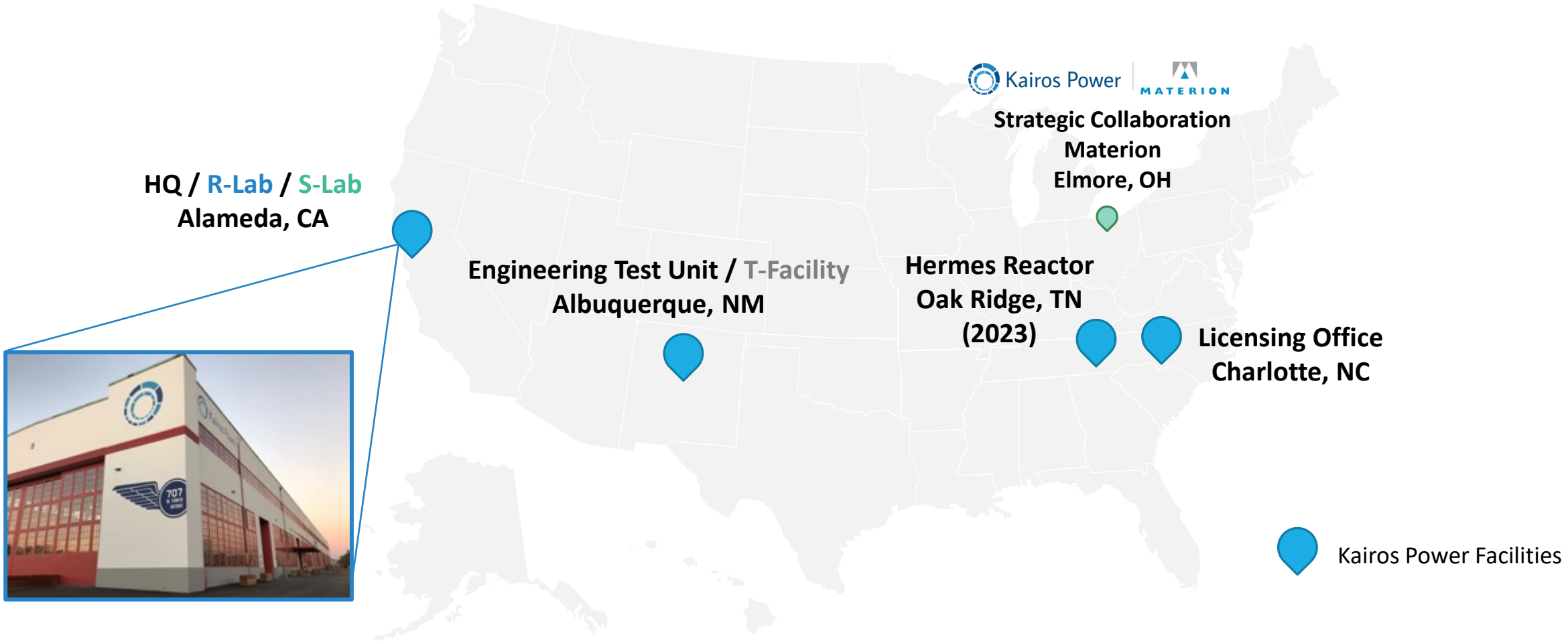
Overview of Kairos Power

- Nuclear energy engineering and design company ***singularly focused*** on the commercialization of the fluoride salt-cooled high temperature reactor (FHR)
  - Founded in 2016
  - Current Staffing
    - >170 Employees
    - ~90% Engineering Staff
- Private funding commitment to engineering design and licensing program and physical demonstration through nuclear and non-nuclear technology development program
- Schedule driven by US demonstration by 2030 (***or earlier***) and rapid deployment ramp in 2030s
- Cost targets set to be competitive with natural gas in the US electricity market

Kairos Power Headquarters

Kairos Power Team

Kairos Power Locations



Kairos Power Highlights of Recent Progress

Internal Milestones and Accomplishments:

R-Lab
Rapid Prototyping and Technology Development

S-Lab
Flibe Chemistry and Materials Testing Lab

T-Facility
Engineering Test Unit
New Mexico Expansion

Hermes Reactor Site Selection
East Tennessee Technology Park

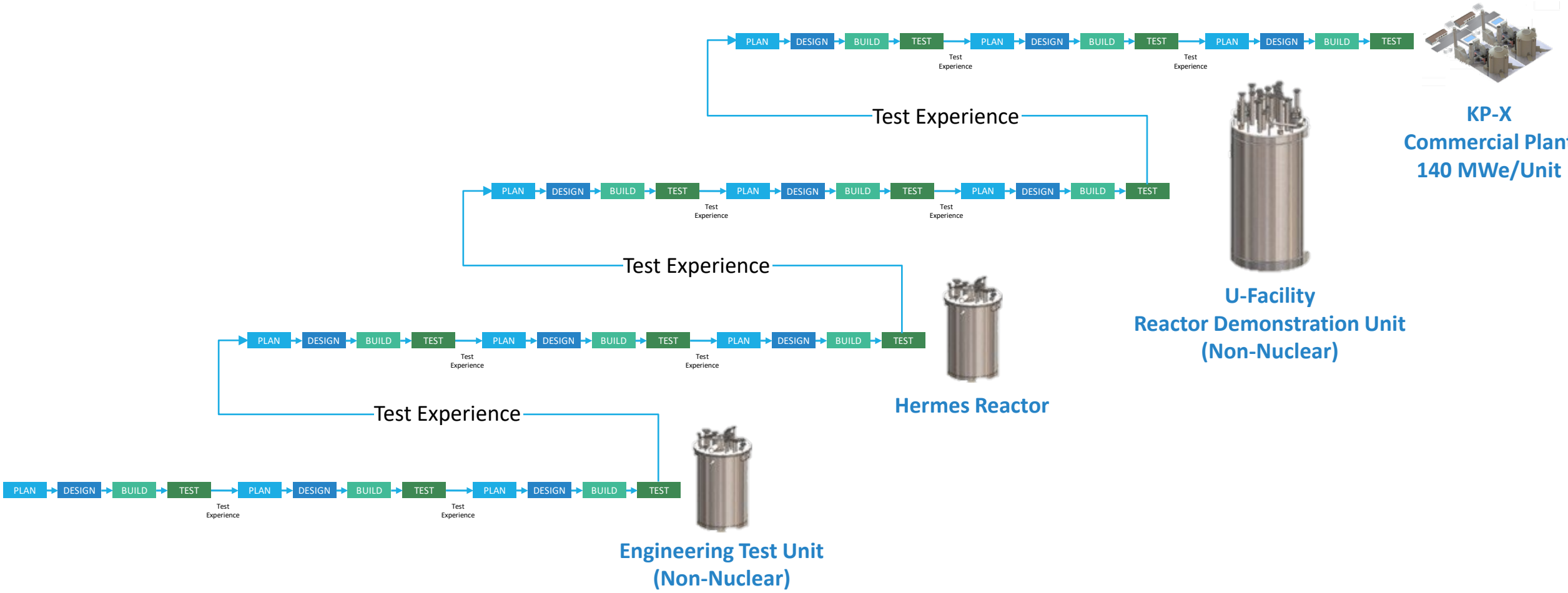
External Awards and Validation:

Nuclear Regulatory Commission
Pre-Application Engagement

Cooperative Development Agreement
Development & Demonstration Collaboration for Hermes

DOE Advanced Reactor Demonstration Program (ARDP)
Risk Reduction Award

Kairos Power Path to Commercialization: Successive Large-Scale Integrated Demonstrations



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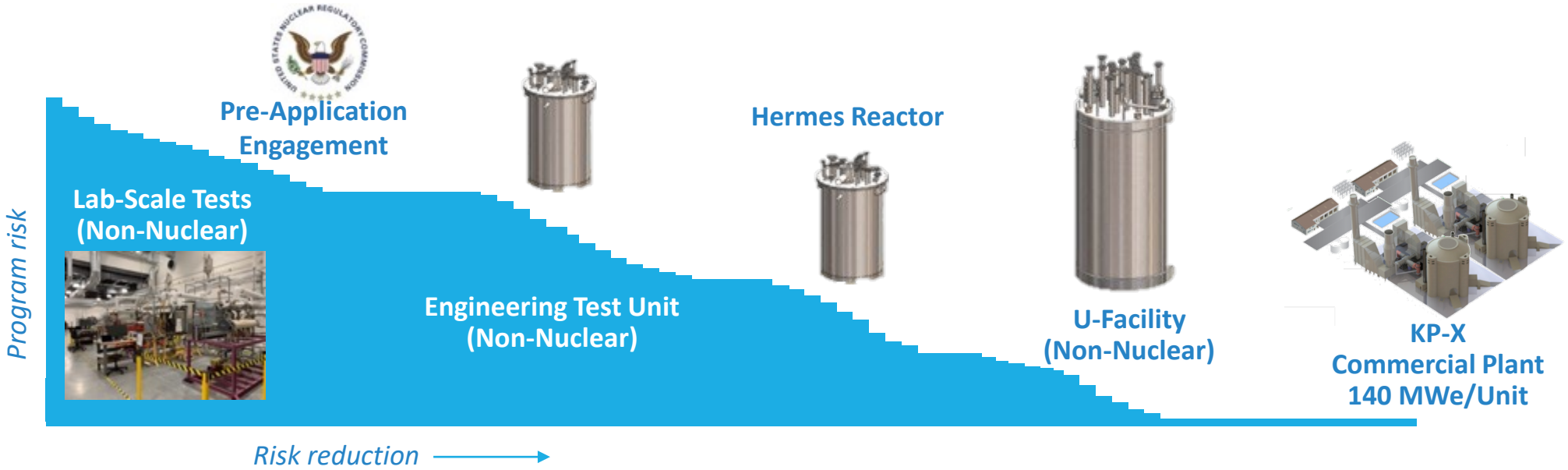
Risk Reduction



Kairos Power is significantly retiring risk to commercial deployment:

- Technical and Cost risk via iterative development and Hermes reactor
- Regulatory risk via comprehensive pre-application engagement
- Commercial risk via full-scale U-Facility

What Does the Driver's Seat Look Like?

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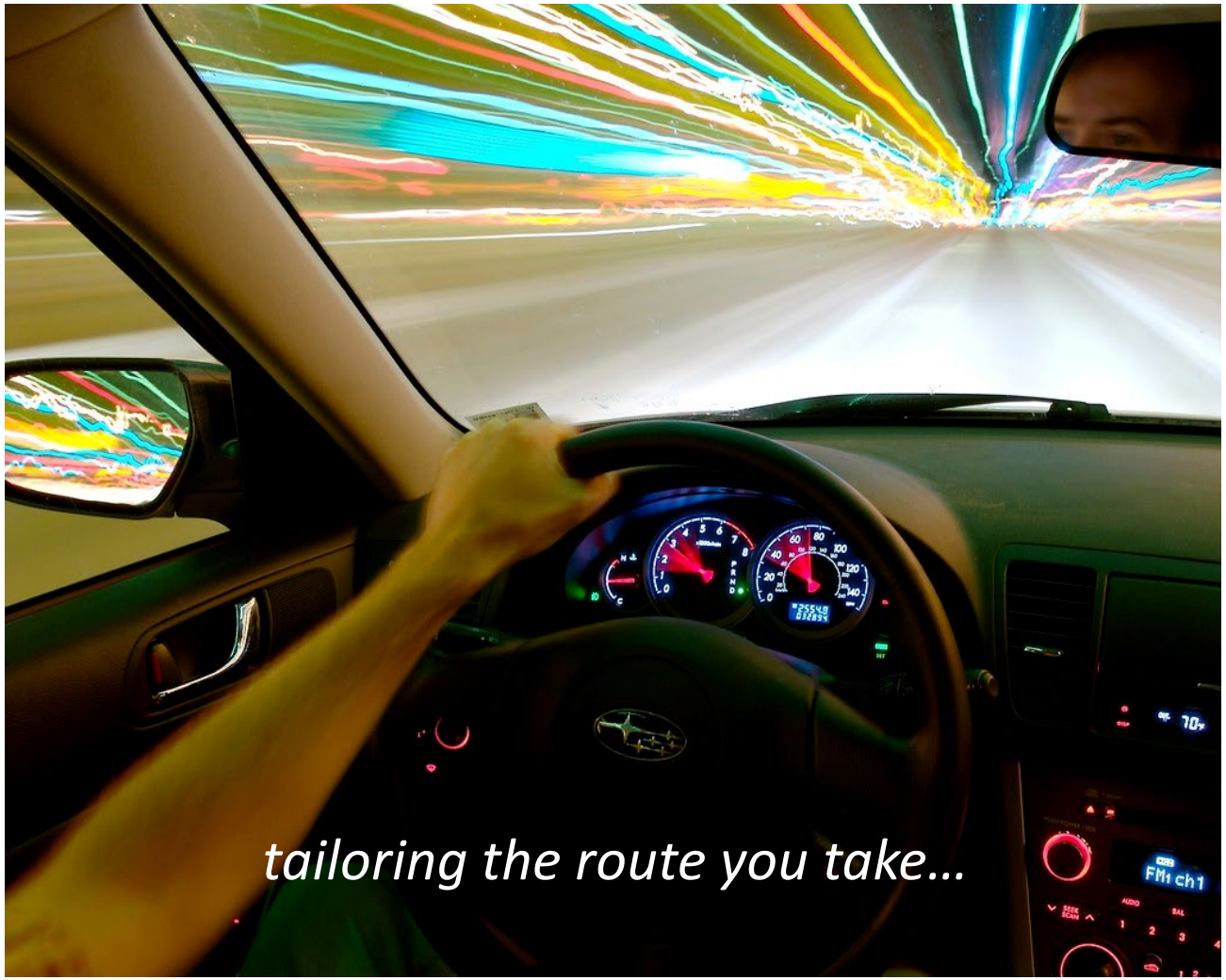
From: *Your location*

To: *Reliable, carbon-free electricity*



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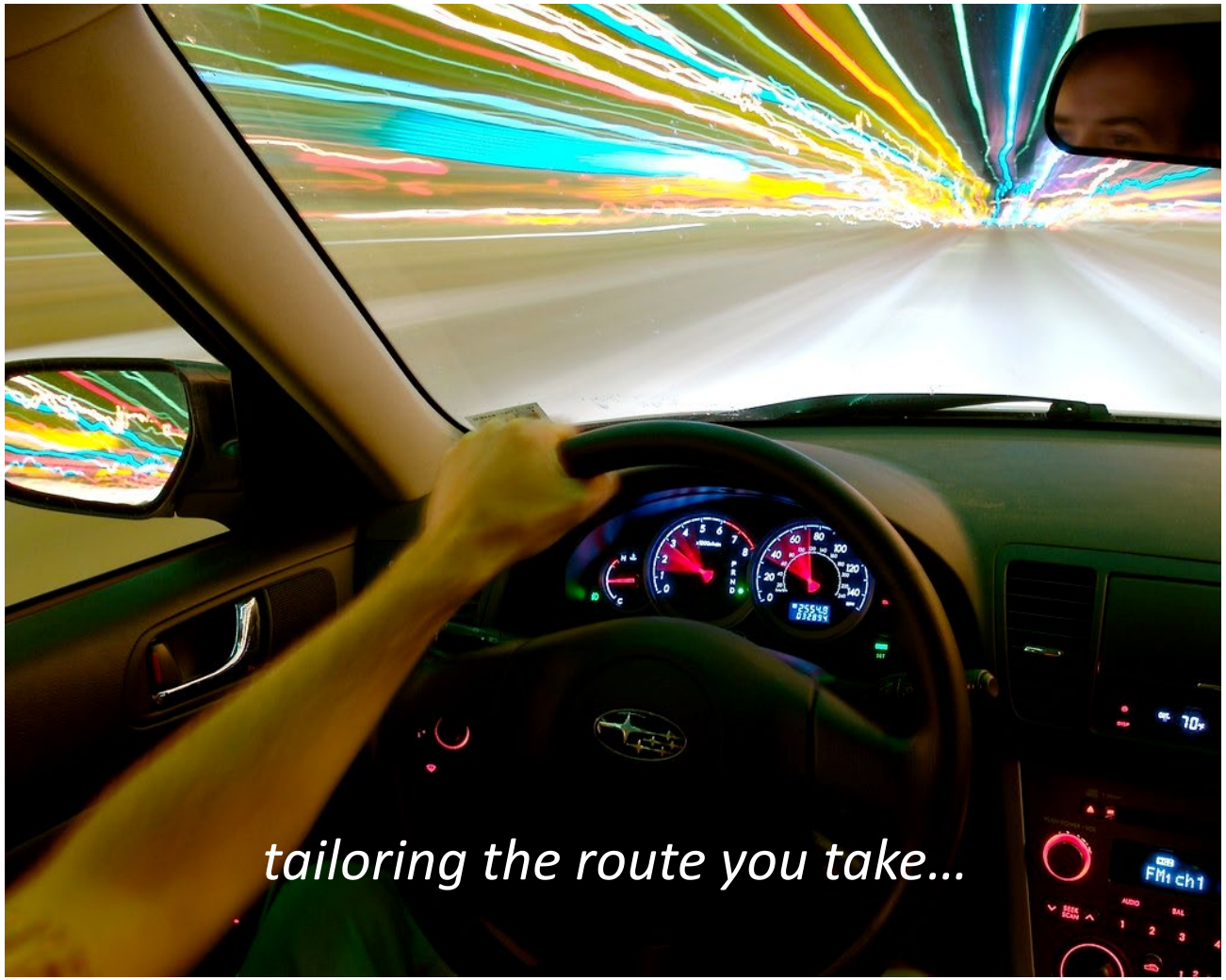
NEW PARADIGM AHEAD Determine your business strategy



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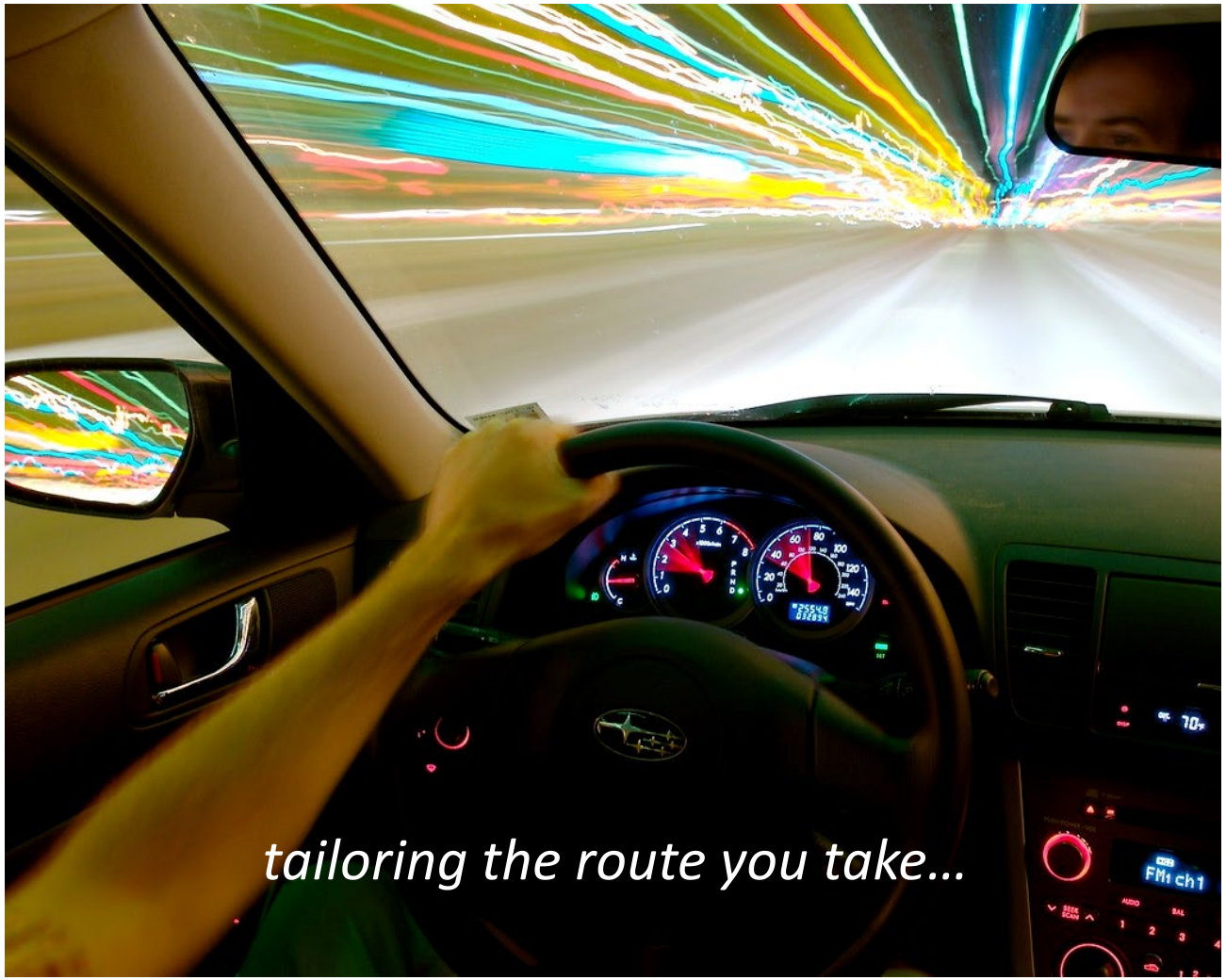
- Determine your business strategy
- Assess the regulatory environment



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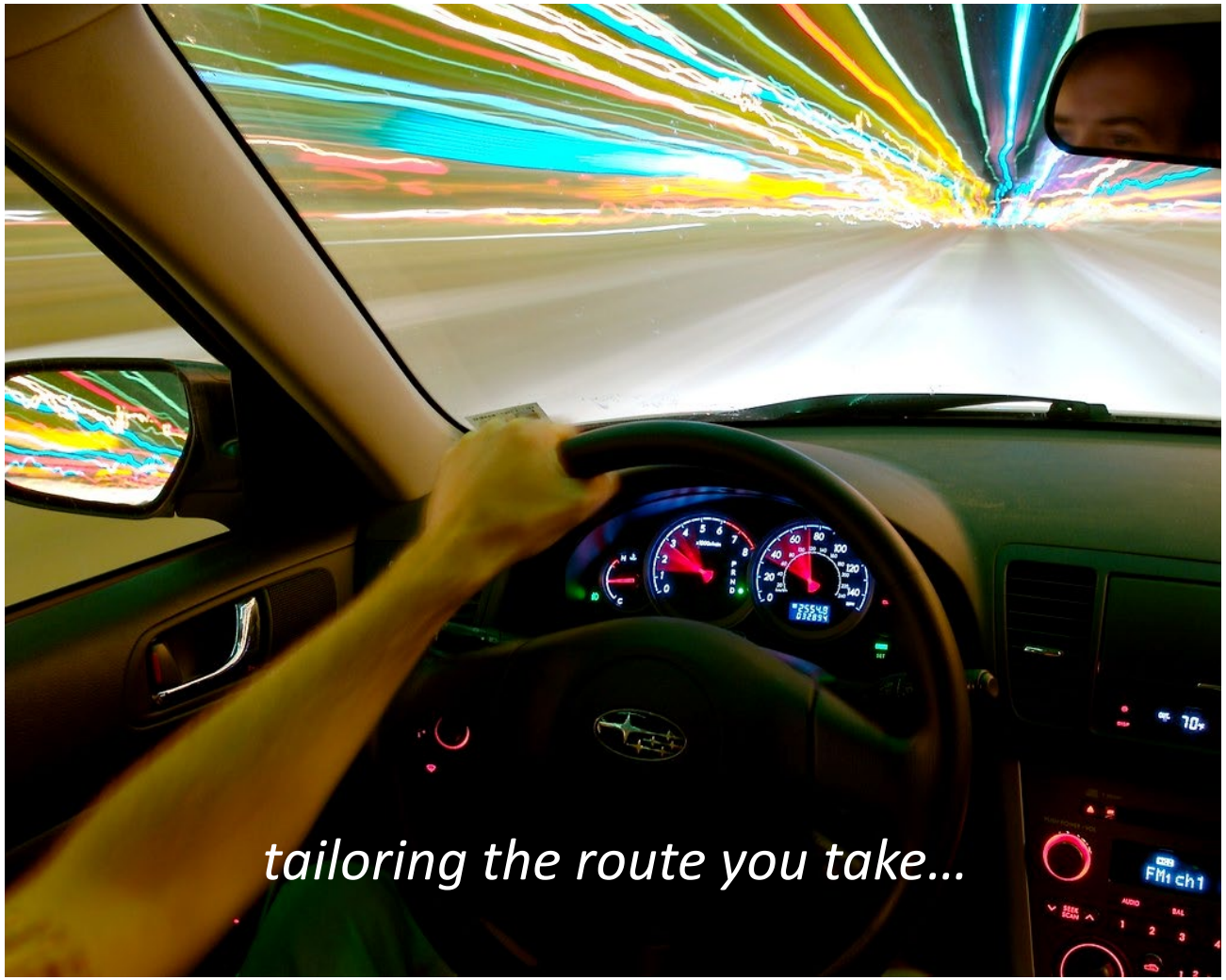
- Determine your business strategy
- Assess the regulatory environment
- Policy issues or rule changes?



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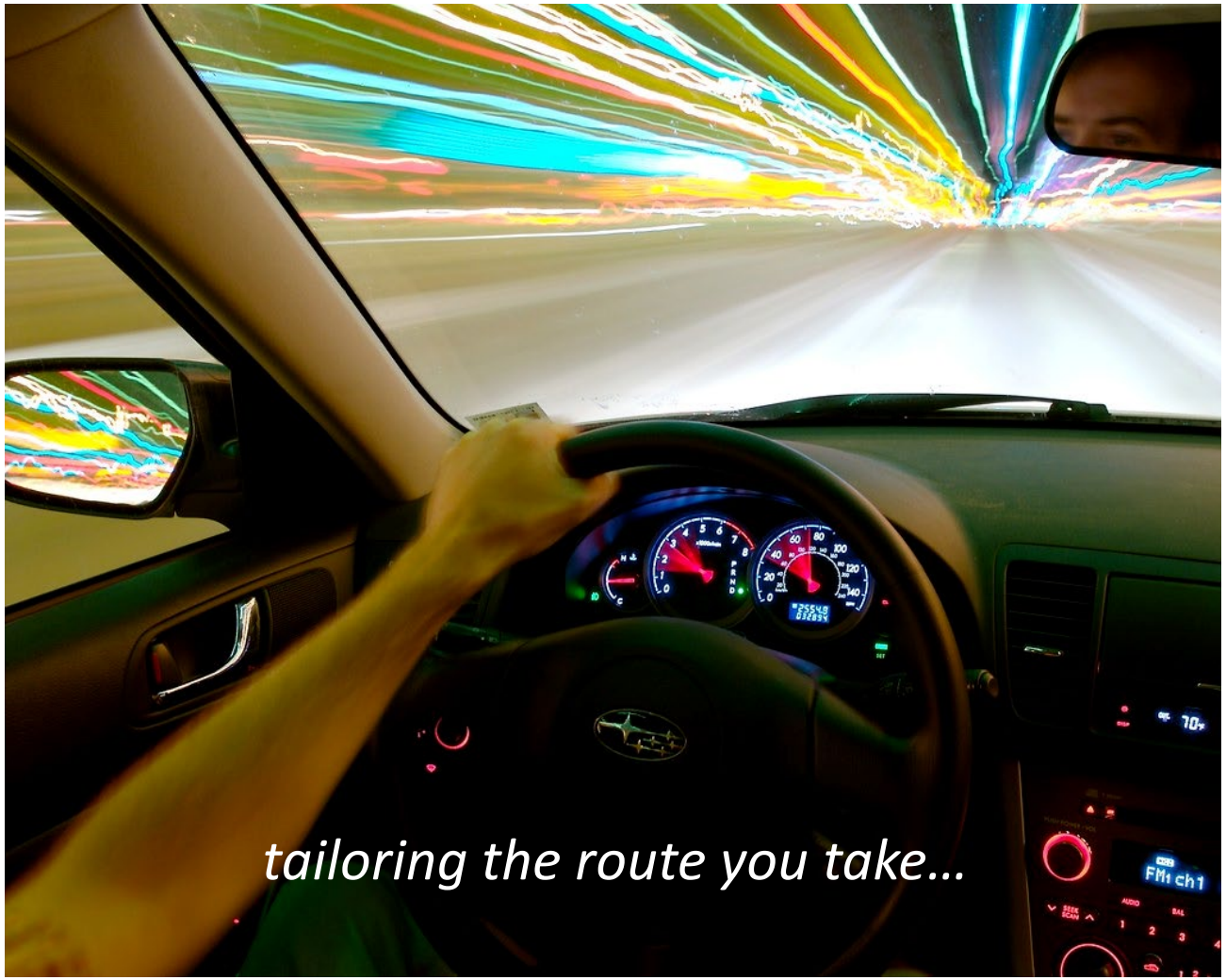
- Determine your business strategy
- Assess the regulatory environment
- Policy issues or rule changes?
- Establish regulatory strategy



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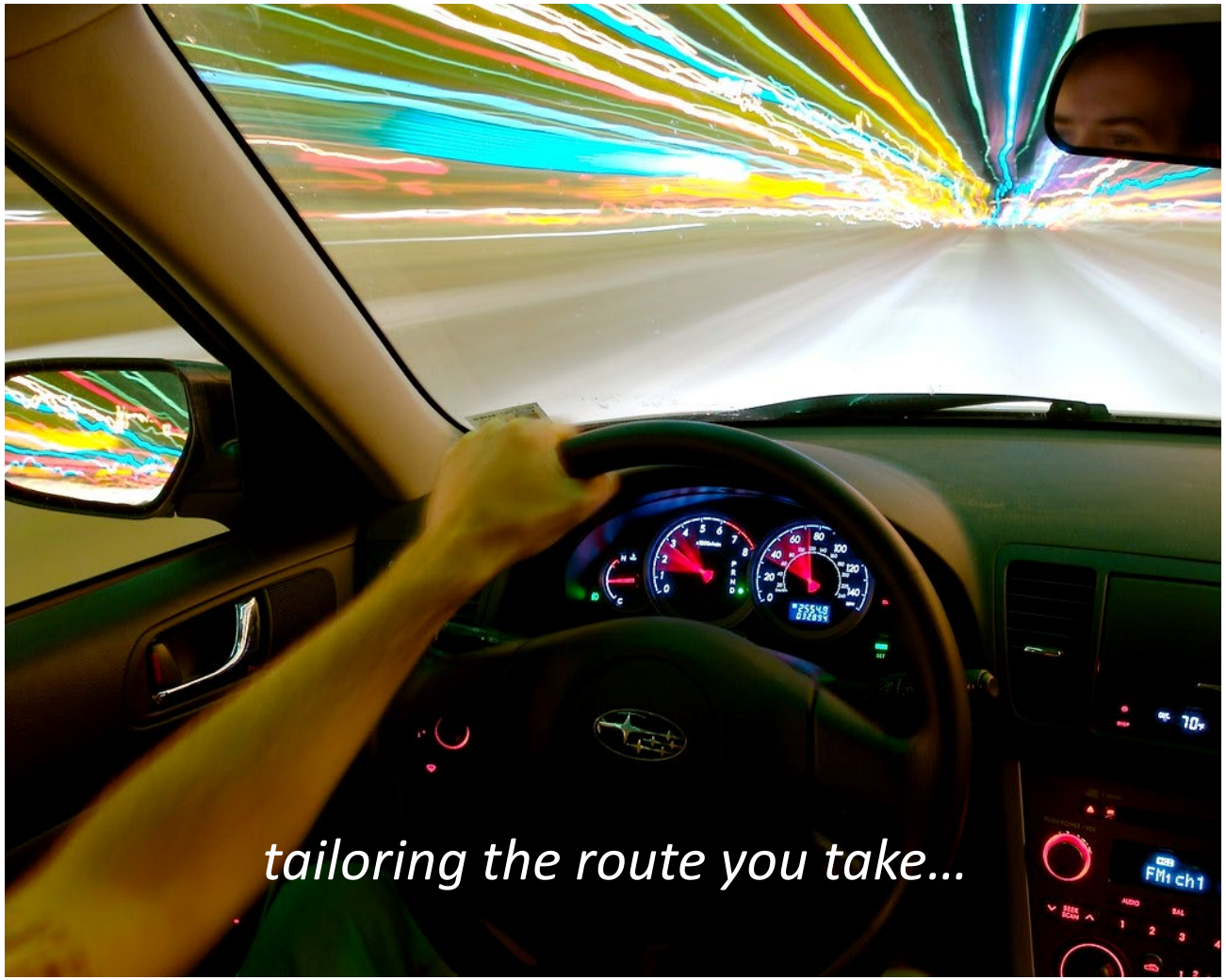
- Assess the regulatory environment
- Policy issues or rule changes?
- Establish regulatory strategy
- Determine pre-application targets



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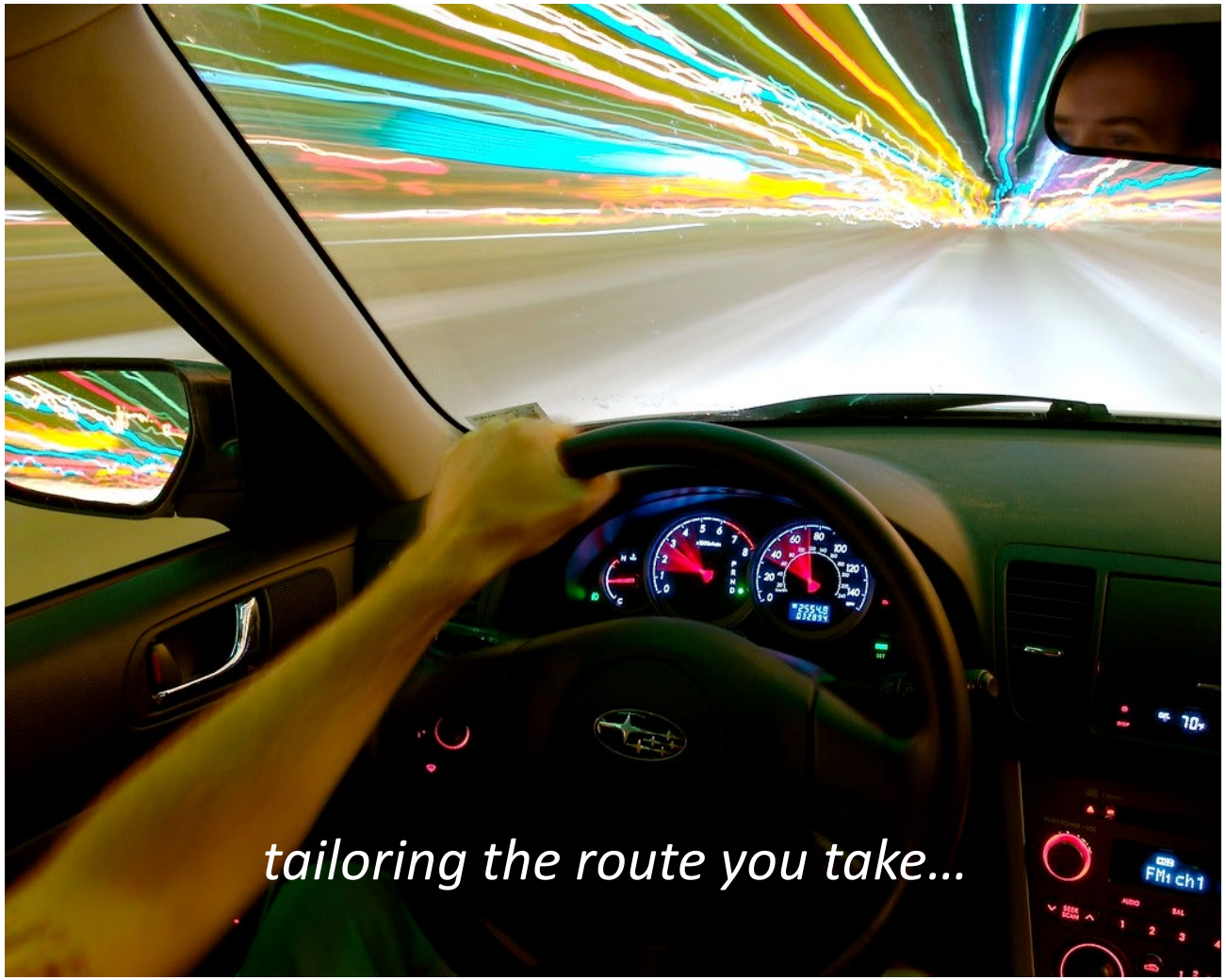
- Determine your business strategy
- Assess the regulatory environment
- Policy issues or rule changes?
- Establish regulatory strategy
- Determine pre-application targets
- Integrate regulatory/business strategy



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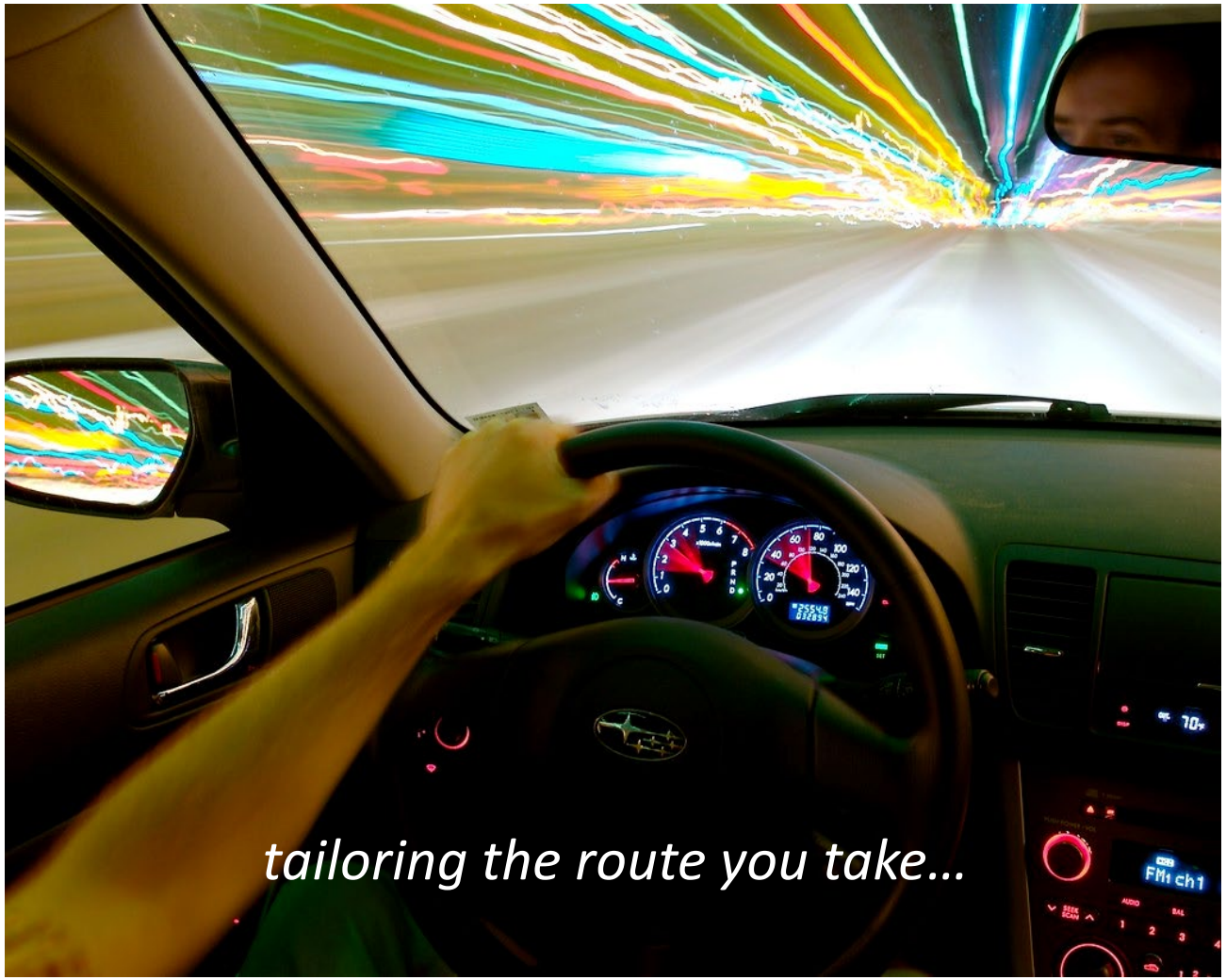
- Assess the regulatory environment
- Policy issues or rule changes?
- Establish regulatory strategy
- Determine pre-application targets
- Integrate regulatory/business strategy
- Monitor, iterate regulatory engagement



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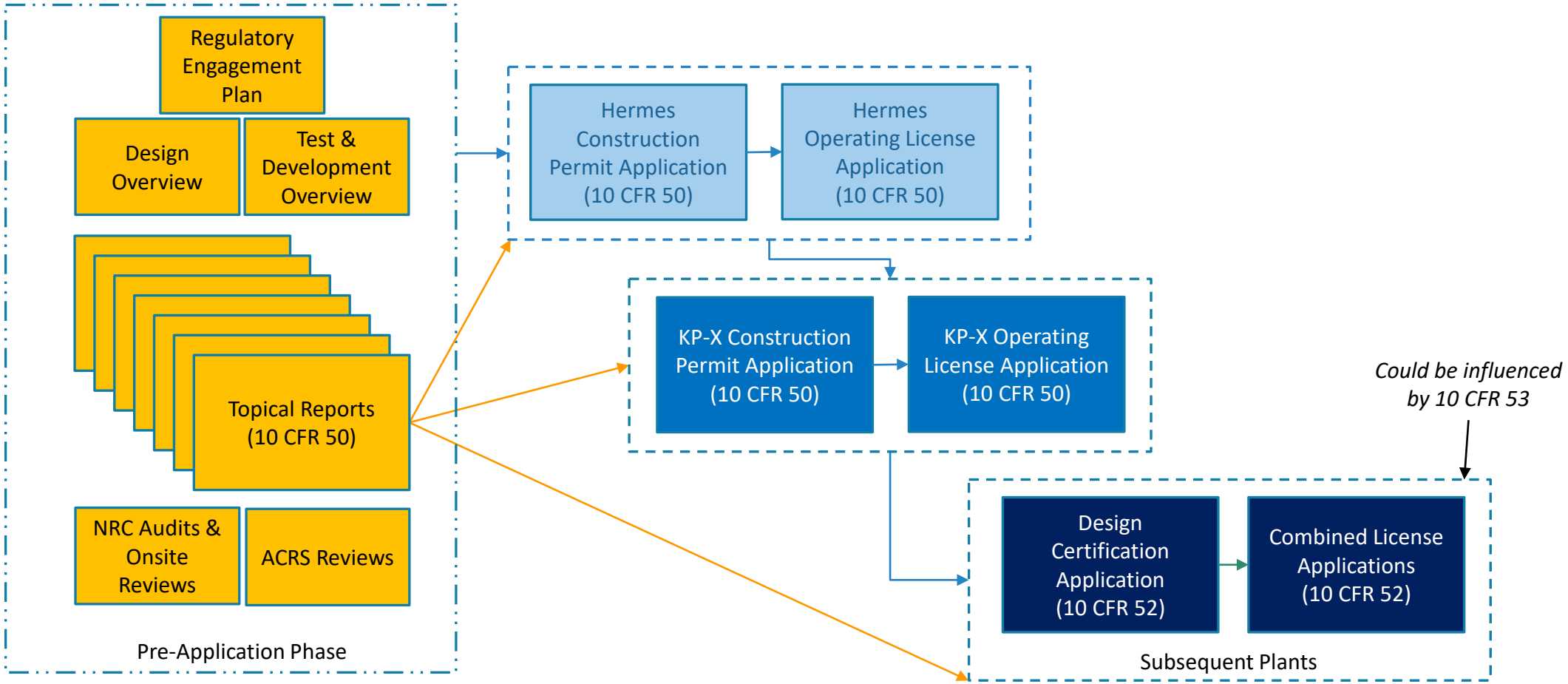
KP-FHR Regulatory Strategy

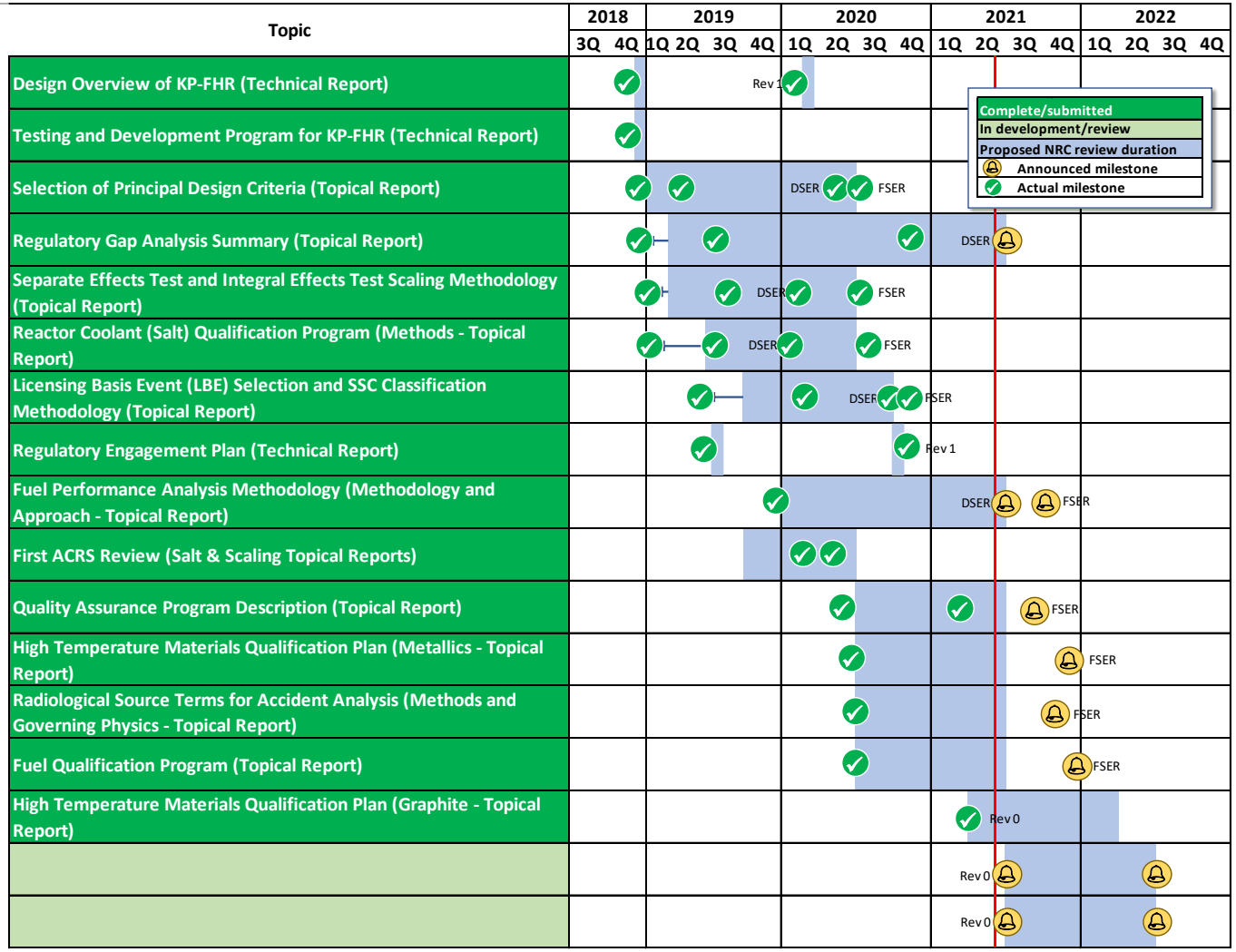


Regulatory Framework

- 10 CFR 50 construction permit and operating license
- 10 CFR 53 and other major changes not timely for Kairos Power schedule
- Assessment of current framework for impacts
  - Non-LWR
  - Standard review plan – NUREG-0800 vs. NUREG-1537
  - Risk-informed safety case
- Active pre-application engagement
- Monitor/iterate
  - Pivot to Hermes NPUF
  - Updated regulatory gap analysis

NRC Pre-Application Engagement Status

- >20 technical or topical reports or revisions to date
- Pilot of “no-RAI” review
- Multiple audits, onsite reviews (including PIRT acceptance)
- **NRC approvals:**
  - Principal Design Criteria
  - Test Scaling Methodology
  - Salt Coolant Qualification
  - Licensing Basis Event Selection
- ACRS review of Test Scaling and Salt topicals (Fuel Performance pending)
- **Under review:**
  - Regulatory Gap Analysis
  - Fuel Performance
  - QA Program
  - High-Temp Metallic Materials
  - Mechanistic Source Term
  - Fuel Qualification
  - High-Temp Graphite Materials



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