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New Reactor Licensing Challenges

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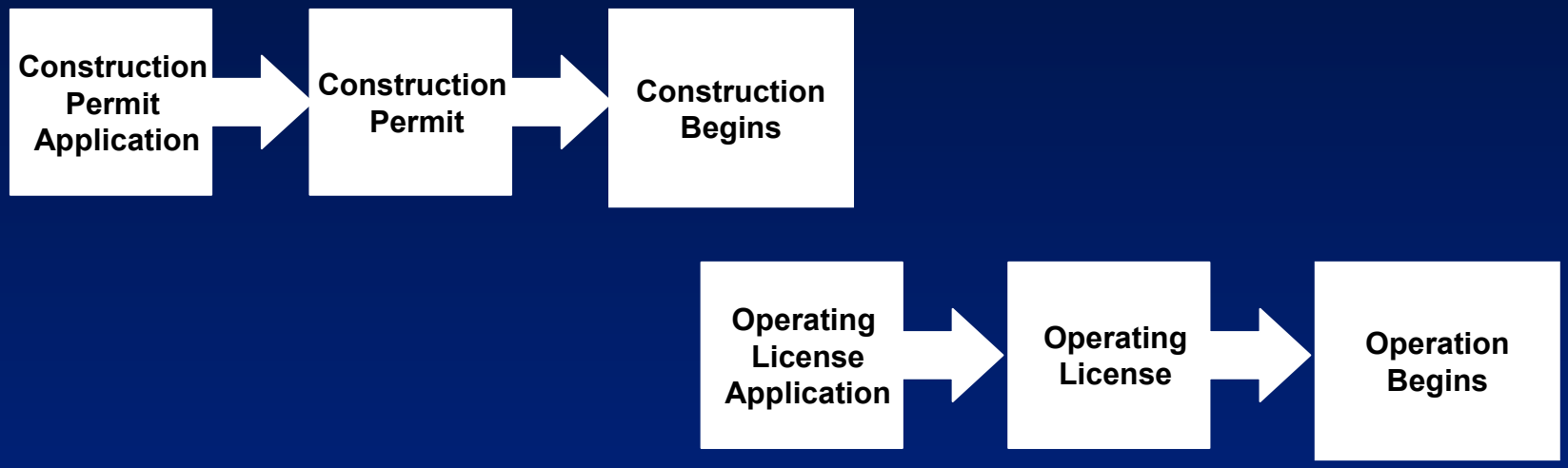
Part 50 Licensing Process



- Design effort proceeded throughout process
- No backfit protection with a CP
- Regulatory standards evolved as construction proceeded

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Discussion Topics

- New Construction/Regulator's Perspective
- Overview of Part 52
- Design-Centered Review Approach
- Expectations and Reality
- Trends Identified
- Challenges/Lessons Learned
- Elements for Construction Success
- In Going Forward…

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New Construction

- Nuclear plants will be built more rapidly than their predecessors
- Detailed engineering essentially complete by start of construction
- Modular construction techniques will be used
- Fabrication of components may begin before COL issuance
- Components and modules will be fabricated in other countries
- Site preparation work will likely be performed

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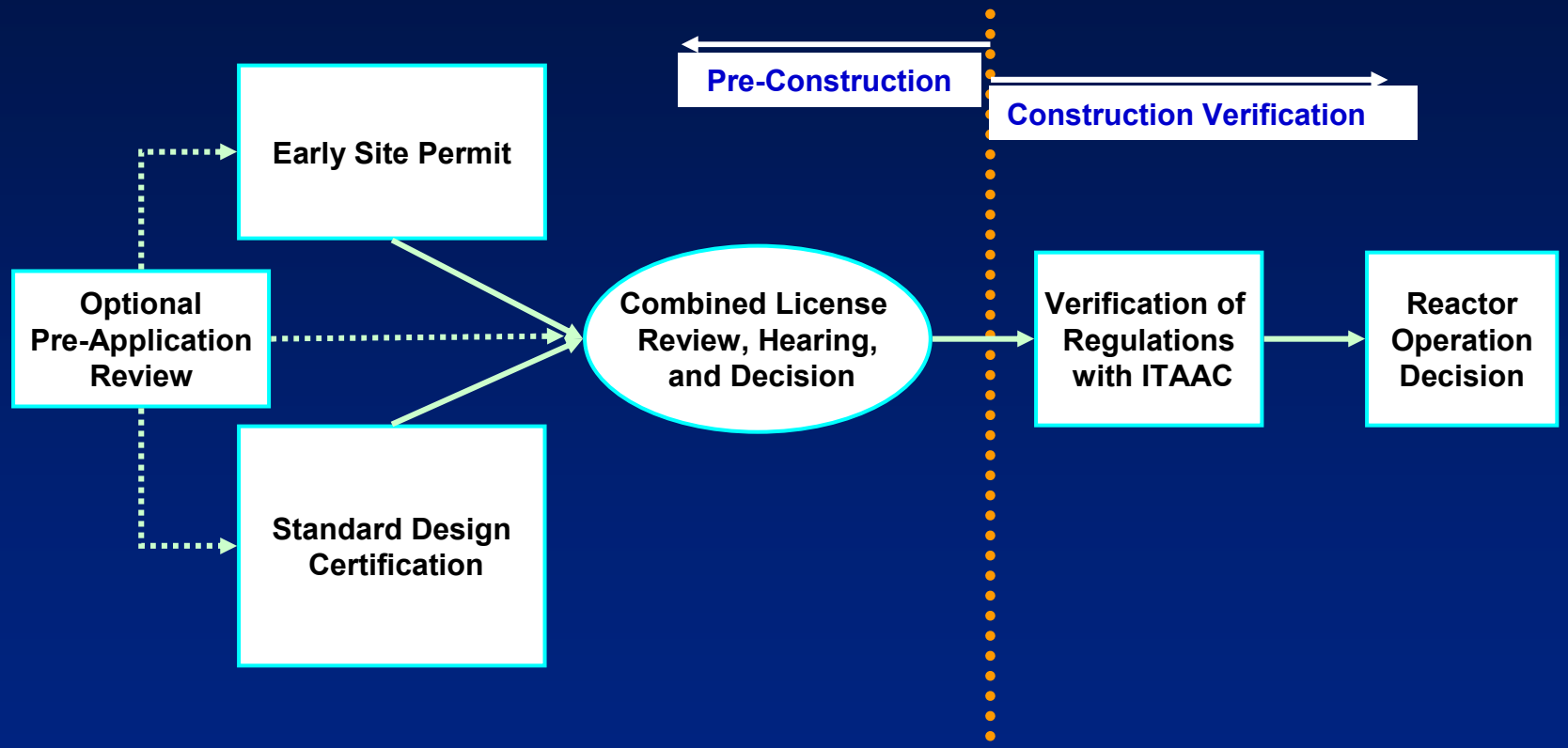
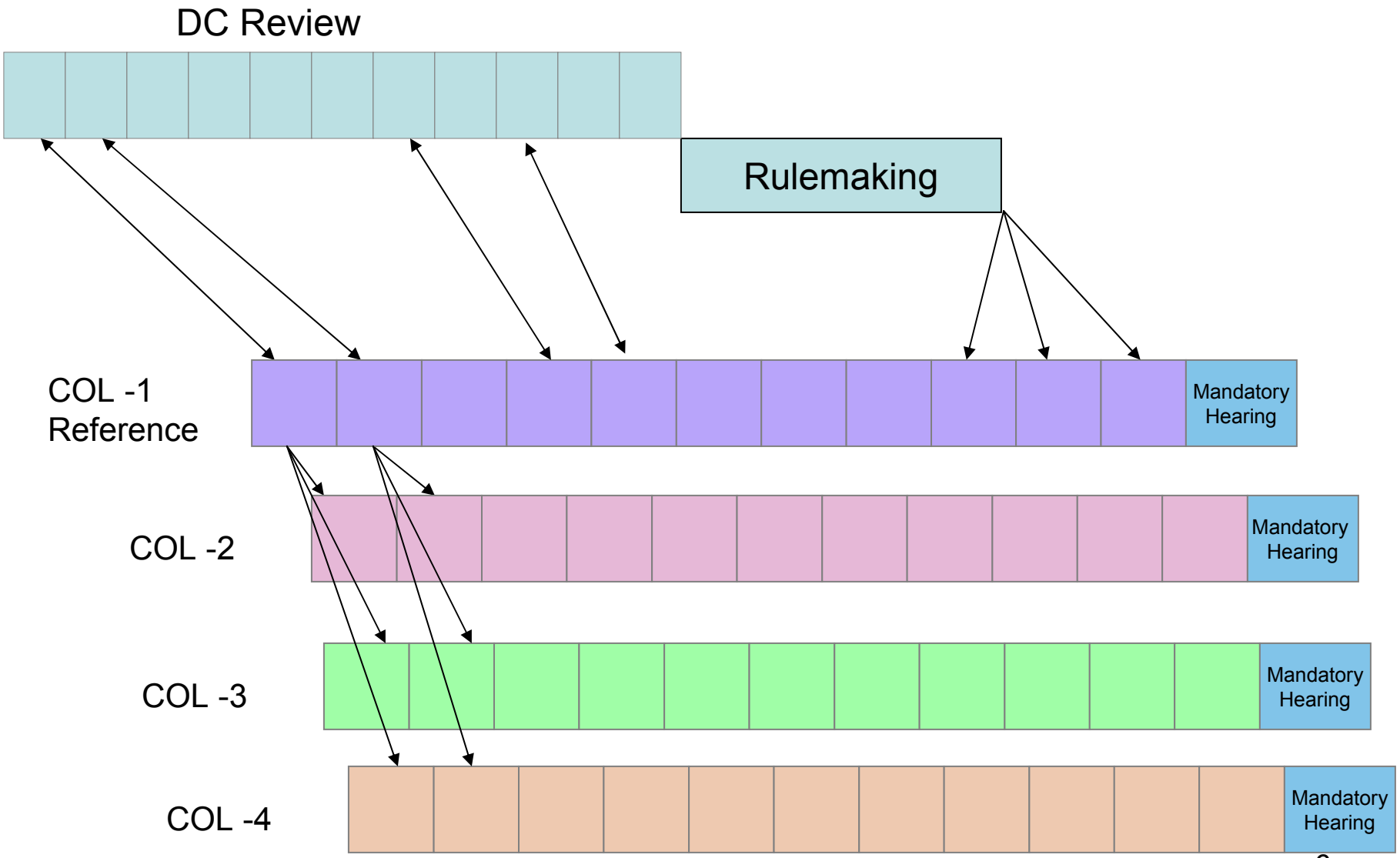
Part 52 - Fitting the Pieces Together



- Licensing decisions finalized before major construction begins
- Inspections w/ITAAC to verify construction
- Limited work may be authorized before COL issuance

One Decision – Multiple Applications



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NRC Expectations vs. Reality

- High Quality Submittals
  - Expectations:
    - Address information required by regulations
    - Utilization of NRC guidance
    - Minimal number of departures
    - Utilization of design-centered review approach
    - Displays benefits from pre-application interactions
    - S-COL standard sections mirror R-COL
  - Reality:
    - Quality benefitted significantly from DCWG meetings and interactions (ESBWR and AP1000)
    - Applications improving over time

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NRC Expectations vs. Reality

- Submittal of Essentially Complete Designs
  - Expectations:
    - Design certification applications are complete and high quality
    - Design is stable when submitted (minimal re-design during the review)
  - Reality:
    - Designs change during the review and cause rework and extend schedules
    - New applications under review

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NRC Expectations vs. Reality

- COLs Reference Certified Designs
  - Expectations:
    - Minimize departures from DCD to extent practicable
    - Follow design-centered review approach
    - Schedule for ongoing design certification is linked to COLA schedule
  - Reality:
    - Every design center is in different stages
      - Departures
      - DC amendment
      - Mid review
      - Beginning review

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NRC Expectations vs. Reality

- Schedules
  - Expectations:
    - 30 months
  - Reality:
    - 33 months?

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Trends Identified

- Incomplete recirculation screen design
- Seismic issues
- Hydrology issues
- Lack of sampling for aquatic species

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Challenges/Lessons Learned

- Simultaneous review of many applications
- Incomplete applications challenge staff's ability in making safety findings
- Applicants revising submission dates which challenge planning and availability of resources
- Staff and applicants have benefitted from pre-application interactions
- Staff is noticing trend in that COL applications are improving with respect to high quality submittals