

# Integrated Policymaking for Realizing Benefits and Mitigating Impacts of LENR

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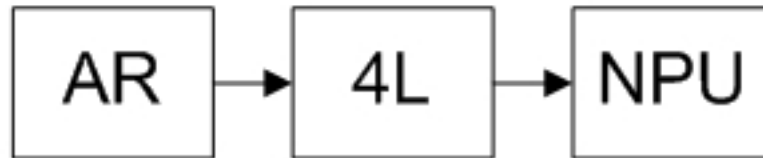
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# Setting the Stage...

- LENR potential as energy source understood since 1989
- Changing landscape since rejection by mainstream science
- Four lines of argument for LENR policy changes
  1. Number and location of researchers
  2. Large body of evidence
  3. Advances in LENR explanation
  4. Recent developments (e.g., proposed devices)

# Changing Landscape → Policy Updates Needed

*Changing Landscape of Cold Fusion*



Changing Landscape of Cold Fusion

AR: Announcement & Rejection

4L: Four Lines of Argument

NPU: Need for Policy Updates

# Three Opportunities for LENR Policy Updates

1. Support for development and realization
2. Planning for mitigation of adverse secondary impacts
3. Integration of LENR policy changes

# Opportunity #1: Policy Updates for LENR Support

- Rational policy framework: evidence-based policymaking
- Levels of evidence for LENR
  - Preponderance of Evidence (PoE) (>50%)
  - Clear and Convincing Evidence (CCE) (>70%)
  - Beyond a Reasonable Doubt (BRD) (>90%)
- Determine LoE from four lines of argument
- Interpret for updated LENR policies

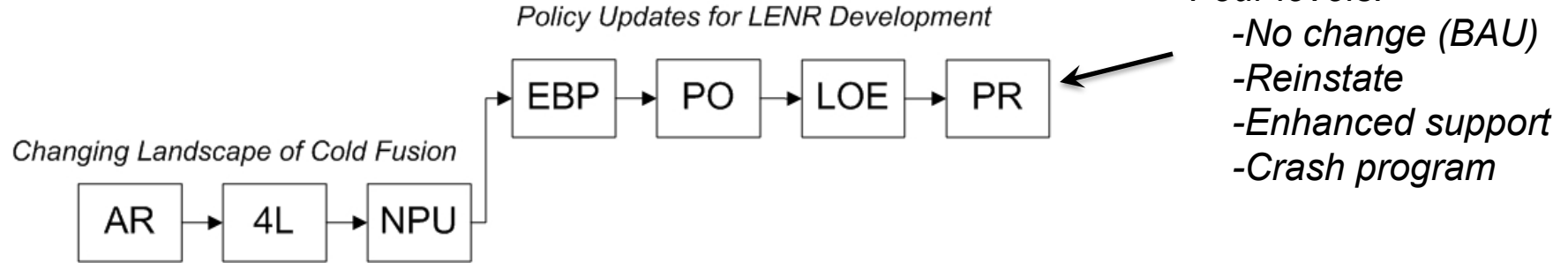
# LENR Policy Options

1. Discontinue research (unlikely)
2. Continued marginalization  
(business as usual)
3. Reinstatement  
(pursue with other emerging technologies)
4. Enhanced support  
(comparable to hot fusion?)
5. Crash program  
(like the Manhattan Project?)

# Connecting Policy Choices to the LoE: An Opinion

- Based on four lines of argument
  1. Number and location of researchers
  2. Large body of evidence
  3. Advances in LENR explanation
  4. Recent developments (e.g., proposed devices)
- LoE at PoE (>50%)  
LENR should be reinstated at a minimum
- LoE at CCE (>70%)  
Perhaps should receive enhanced support
- LoE at BRD (>90%)  
May even warrant crash program

# Policy Updates for LENR Development



## Changing Landscape of Cold Fusion

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## Policy Updates for LENR Development

EBP: Evidence-Based Policymaking

PO: Policy Options for LENR

LOE: Level of Evidence (POE, CCE, BRD)

PR: Policy Responses

No Change

Reinstate

Enhanced Support

Crash Program



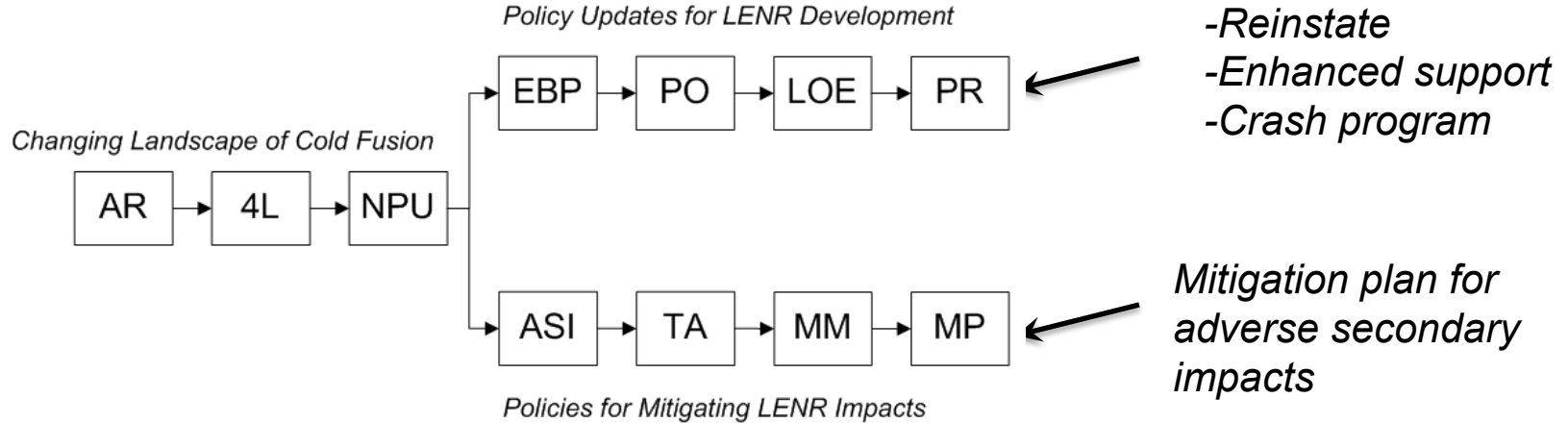
# Opportunity #2: Policies for Mitigating LENR Impacts

- LENR as disruptive technology
- Anticipated adverse secondary impacts
- Direct impacts - entire energy value chain
  - Supply
  - Transport
  - Storage
  - Utilization
- Indirect impacts - mostly social
  - Energy communities
  - Workforces
  - Tax revenues
  - Many others

# Technology Assessment for Impact Mitigation

- Well-established methodology
- Ample energy-related precedents
- Addresses both direct and indirect impacts
- Enables proactive planning
- TA Stages
  - Identify impacts
  - Determine affected parties
  - Develop mitigation strategy
  - Define sources of assistance (e.g., agencies)
  - Engage representatives (advisory group)
  - Define mitigation measures (direct and indirect impacts)
- Develop and implement mitigation plan

# Policies for Mitigating LENR Impacts



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## Policy Updates for LENR Development

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 PO: Policy Options for LENR  
 LOE: Level of Evidence (POE, CCE, BRD)  
 PR: Policy Responses  
     No Change  
     Reinstate  
     Enhanced Support  
     Crash Program

## Policies for Mitigating LENR Impacts

ASI: Adverse Secondary Impacts  
 TA: Technology Assessment  
 MM: Mitigation Measures  
 MP: Mitigation Plan

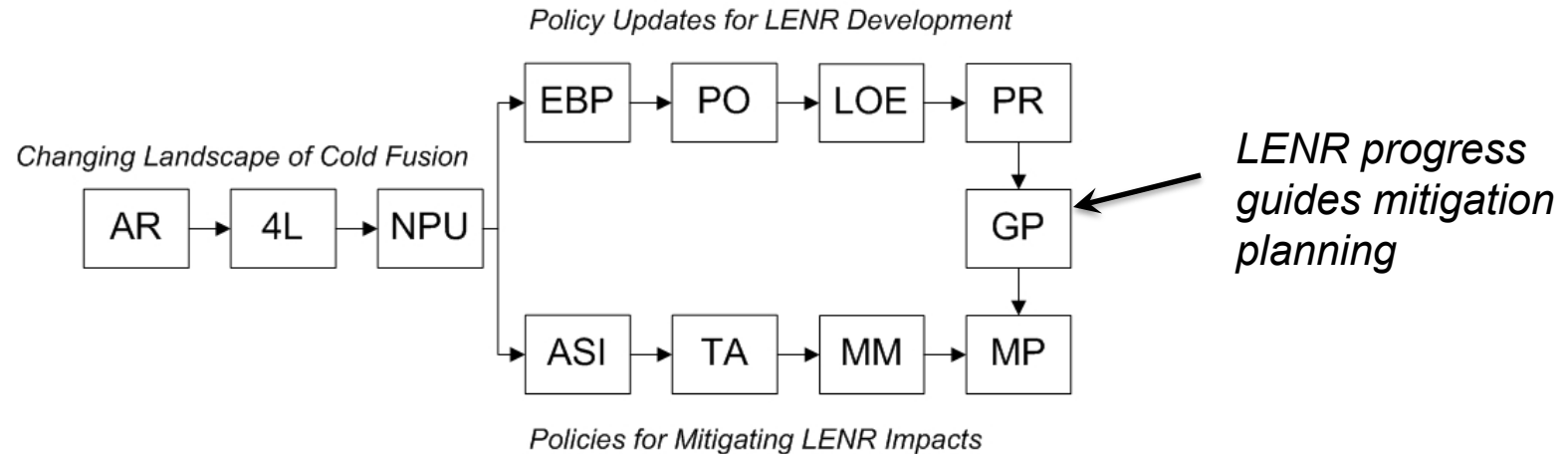
# Opportunity #3: Integration of LENR Policies

- Coordination...
  1. Of impact mitigation policies with LENR support policies
  2. Among public agencies that develop and implement policies
  3. Of public sector and private sector policies
  4. Of policies among the world's nations
- Other opportunities may also be readily identified

# Mitigation Planning Is “Informed” by LENR Progress

- Convey progress toward realization
- Adjust mitigation schedule accordingly
- Realize objectives of proactive planning

# Mitigation Planning Depends on Rate of LENR Development



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ASI: Adverse Secondary Impacts

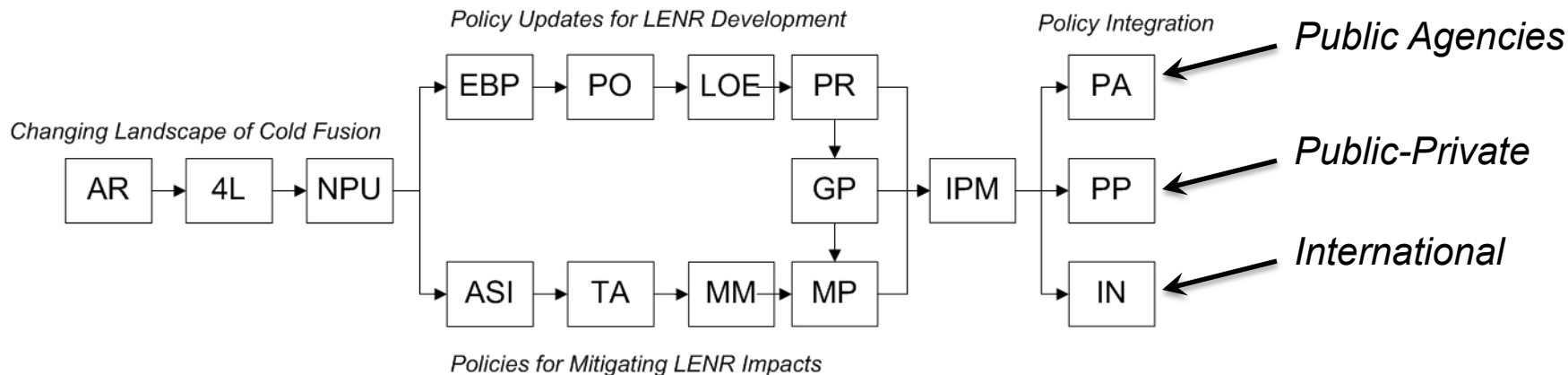
TA: Technology Assessment

MM: Mitigation Measures

MP: Mitigation Plan

GP: Guidance of Mitigation Planning

# Other Policy Integration Examples



## Changing Landscape of Cold Fusion

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## Policy Integration

IPM: Integrated Policymaking Basis

PA: Public Agencies (National)

PP: Public-Private Actions

IN: International

# LENR Policy Integration among Public Agencies

- Focus on entities within individual nations
- Include national, state, and local entities
- Coordinate planning and policymaking functions of agencies
- Make use of interagency agreements for LENR issues
- Utilize informal measures for collaboration (e.g., regular inter-agency meetings)



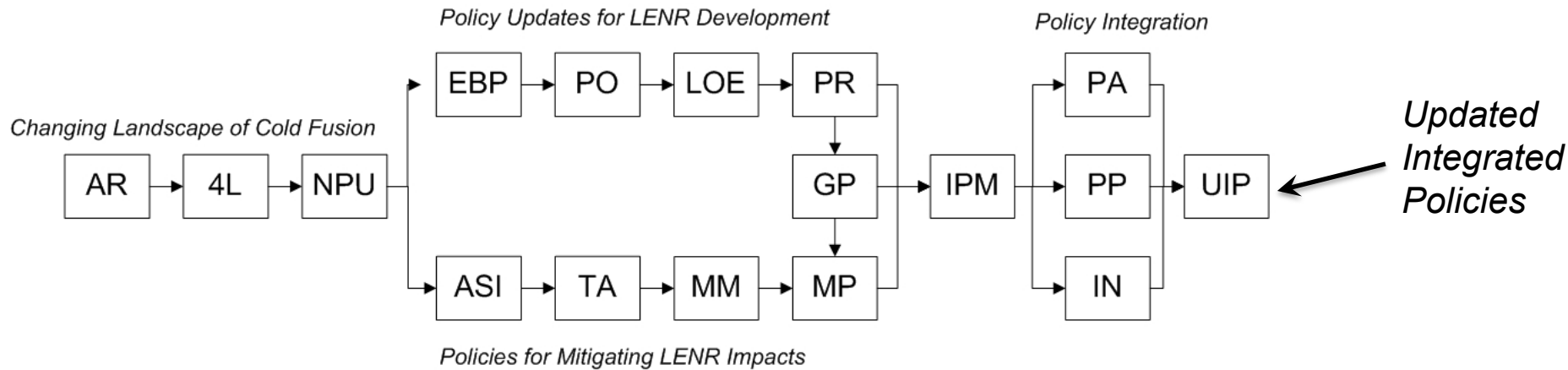
# LENR Policy Integration between Public and Private Sectors

- Implement more realistic LENR patent policies
- Develop technology transfer programs for government research
- Implement LENR research support for small business (e.g., SBIR)
- Utilize public-private partnerships (PPPs)
- Take advantage of market forces; implement government policies for "market failures"

# LENR Policy Integration among Nations

- Bilateral and multilateral agreements for facilitating LENR availability
- International programs for supporting LENR development
- UN programs for distribution of LENR units in third world nations
- World Trade Organization rules for expedited LENR sales and trade
- World Bank loan programs for LENR availability worldwide

# Goal Realized: Updated and Integrated LENR Policies



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UIP: Updated and Integrated Policies

# Potential Benefits of Integration

- Avoidance of cross-purposes and conflicts
- Efficiency in achieving policy objectives
- Cost effectiveness of common policy provisions
- More objective policymaking vs. political decisions?
- Potential for improved social equity
- Overall increase in public welfare benefit

# Challenges for LENR Policy Integration

- Overcoming historical barriers to LENR acceptance
- Immensity of direct and indirect secondary impacts
- Inertia of long-standing energy framework
- Conflicting agendas and interests at many levels
- Interagency and international competition
- Ample precedents for poorly integrated policies besides LENR
- Many others...

# Summary and Conclusions

- Changing landscape of LENR necessitates policy updates
- Changes needed for LENR realization and for mitigation of secondary impacts
- Opportunities exist for proactive integrated policymaking
- Integration may be accomplished in many ways and venues
- Benefits of integrating policies are substantial
- Many challenges must be met for LENR policy integration
- Conceptual descriptions and examples now possible
- But very complicated in real world achievement

# For More Information...

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