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Workforce Planning and Training

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Joint IAEA/ICTP School of Nuclear Energy Management

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Workforce Planning and Training

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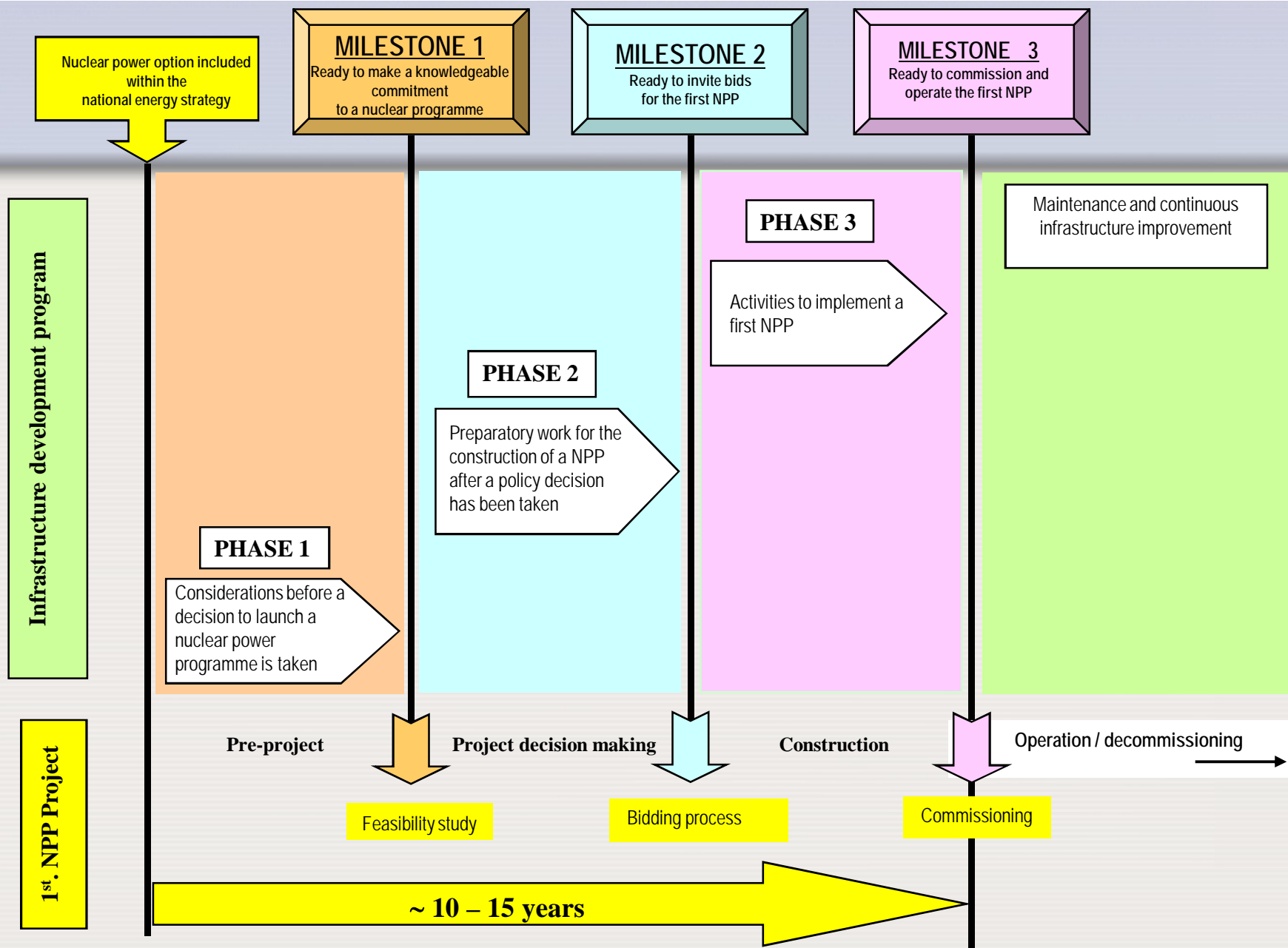
*Atoms for Peace: The First Half Century
1957–2007*



LESSON OBJECTIVES

By the end of this lesson the student should be able to:

- Describe what is meant by” Workforce Planning”
- Define the key organisations in a nuclear power programme for workforce planning purposes
- Describe the roles and resource requirements of the key organisations in each of the 3 phases of Infrastructure development
- Describe the typical make-up of the workforce for an operating organisation



KEY INFRASTRUCTURE ISSUES

- National position
- Nuclear safety
- Management
- Funding and financing
- Legislative framework
- Safeguards
- Regulatory framework
- Radiation protection
- Electric grid
- Human resource development
- Stakeholder involvement
- Site and supporting facilities
- Environmental protection
- Emergency planning
- Security and physical protection
- Nuclear fuel cycle
- Radioactive waste
- Industrial involvement
- Procurement

Note: All 19 issues have a Human Resource component

THE RESPONSIBILITIES OF MANAGEMENT REGARDING HUMAN RESOURCES

- Senior management should ensure that the necessary individual competences are available for the effective and efficient operation of the organization.
- Senior management should evaluate both present and expected needs for competences against the competences already available in the organization
 - WORKFORCE PLANNING

(IAEA Safety Guide GS-G-3.1 Application of the Management System for Facilities and Activities)

WORKFORCE PLANNING:

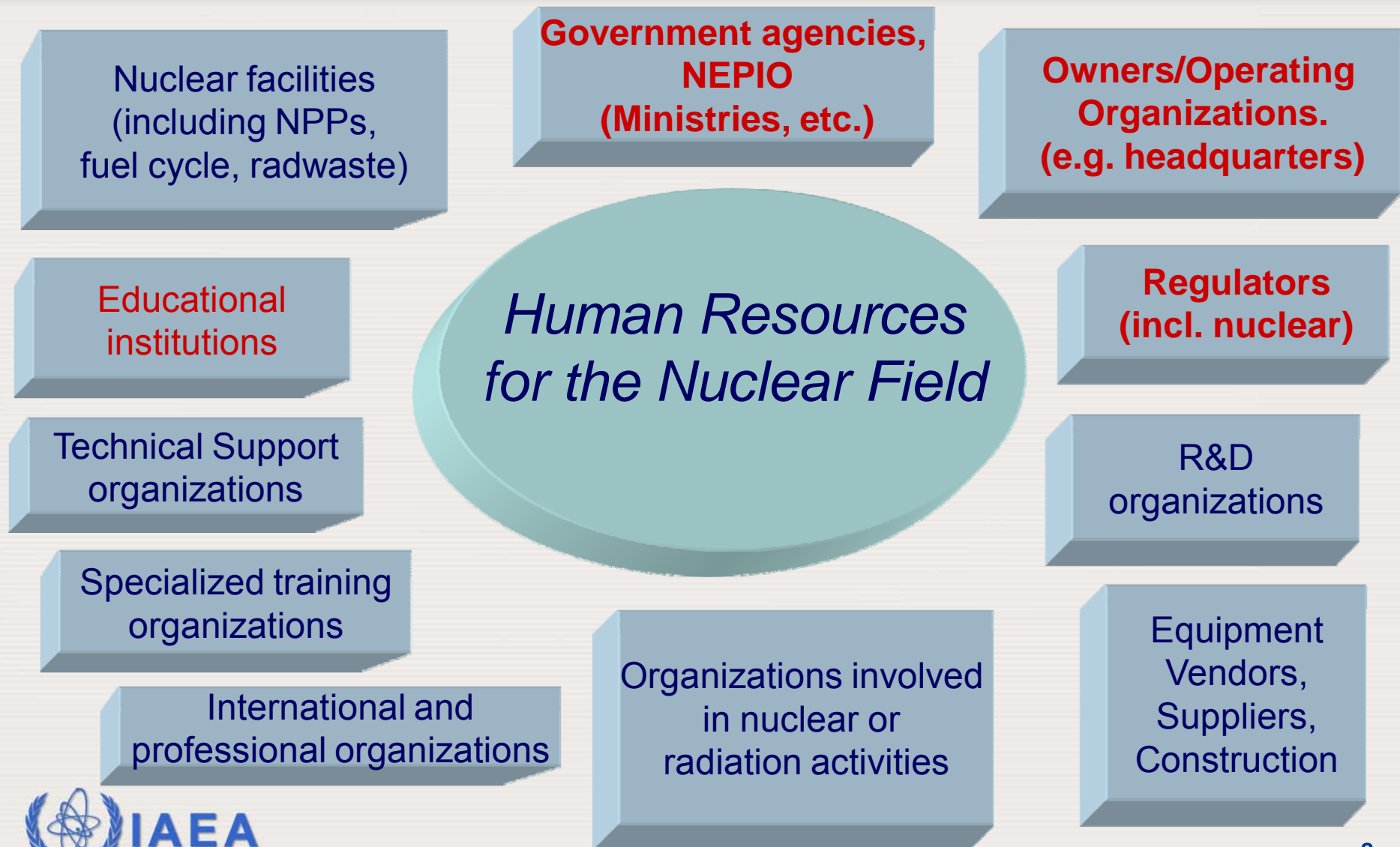
“The systematic identification and analysis of what an organization/nation is going to need in terms of the numbers, type, and quality of workforce to achieve its objectives.”

Identifies the steps that should be taken to get the right number of the right people in the right place at the right time.

Workforce Planning & HRM



Organizations with Human Resources Requirements



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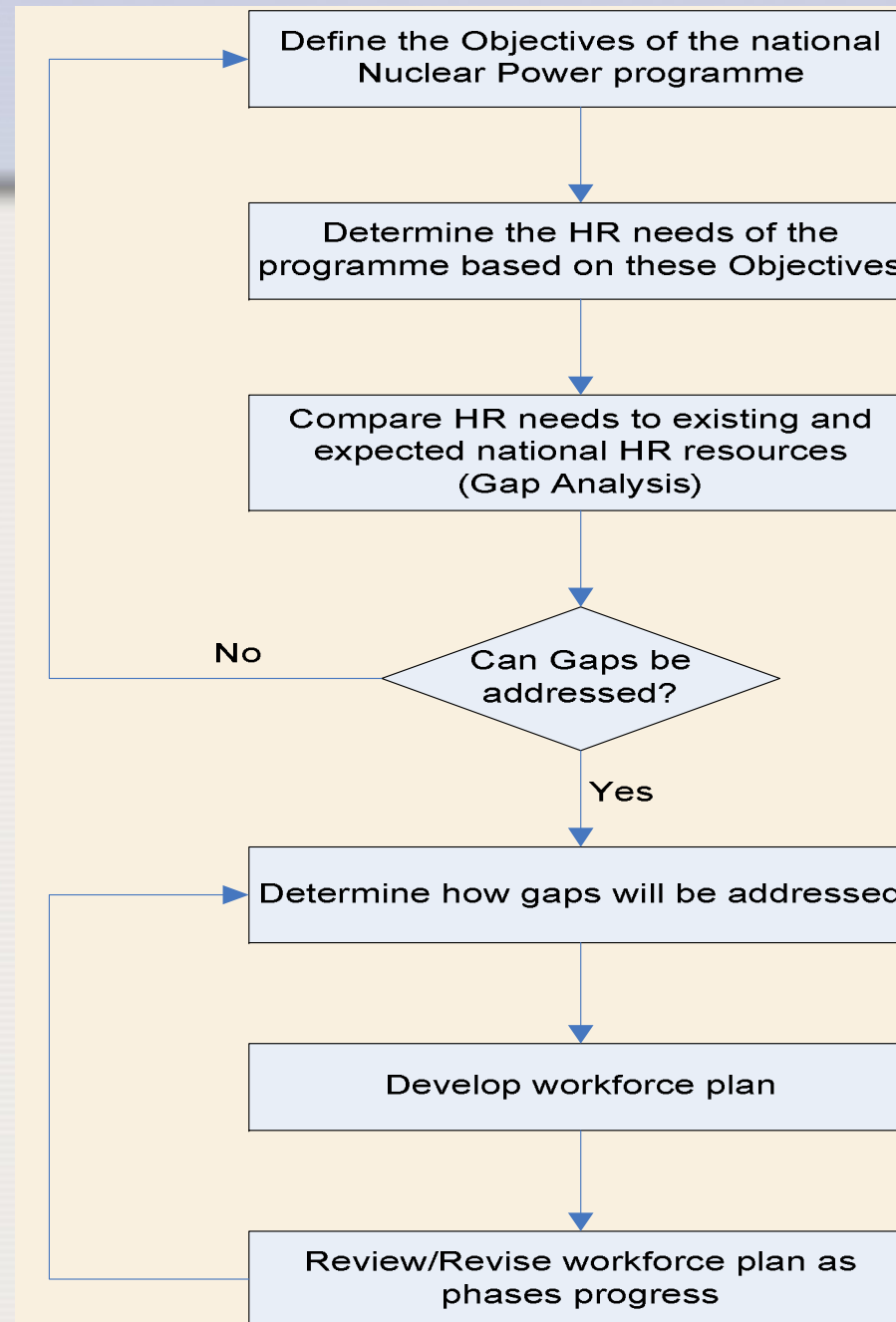
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IAEA Focus on Workforce Planning

- Addressing the Workforce requirements for each of the three phases focusing on 3 main organisational entities identified as having specific responsibilities within the “Milestones” document:
 - NEPIO
 - Regulatory Body
 - Operating Organisation
- Focus especially on Phases I & II, recognising that Vendor(s) may provide significant assistance for Operating Organisation during Phase III.

(IAEA NE Series Report (NG-T-3.10) Workforce Planning for New Nuclear Power Programmes Feb 2011)

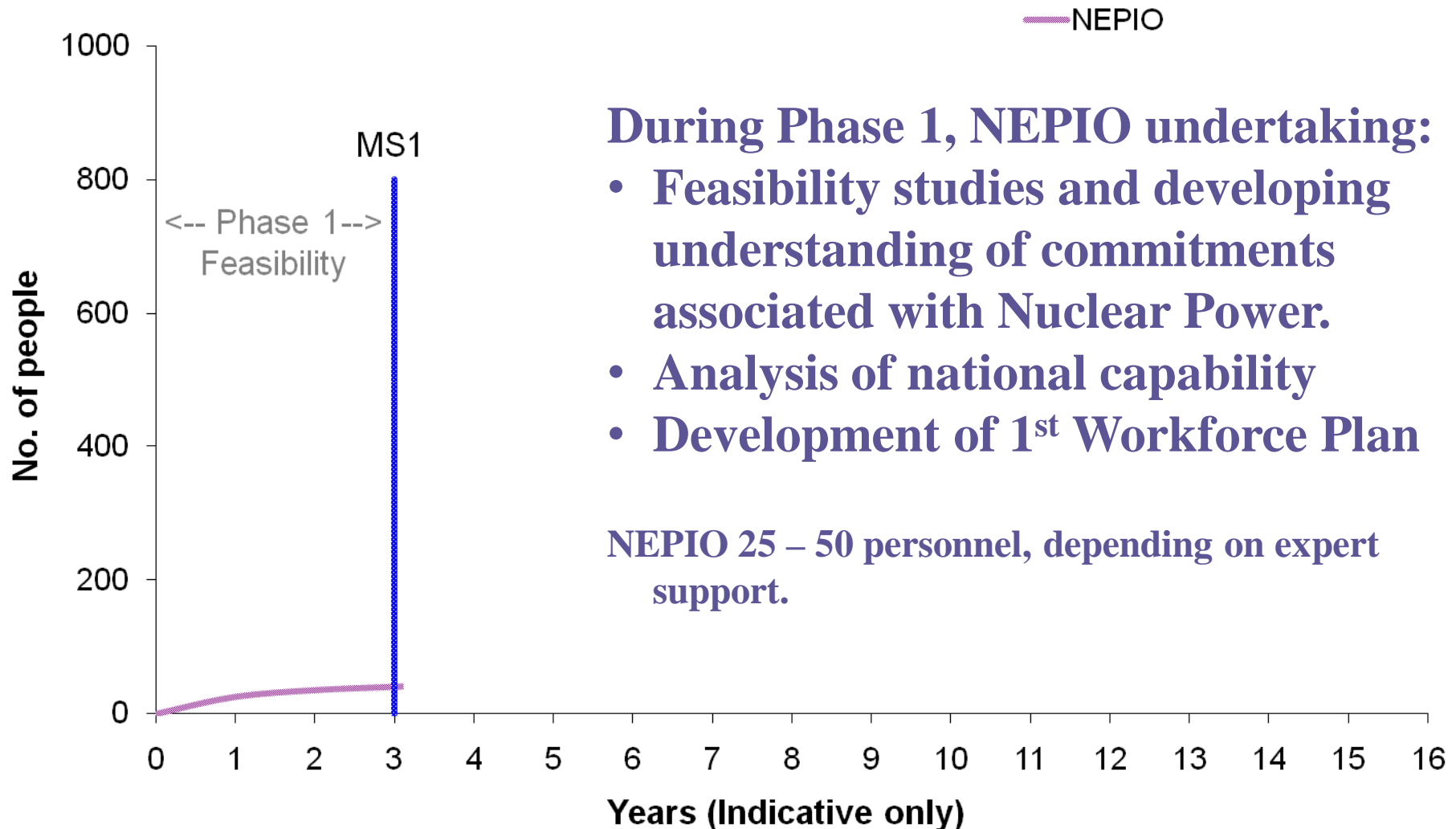
Workforce Planning Process



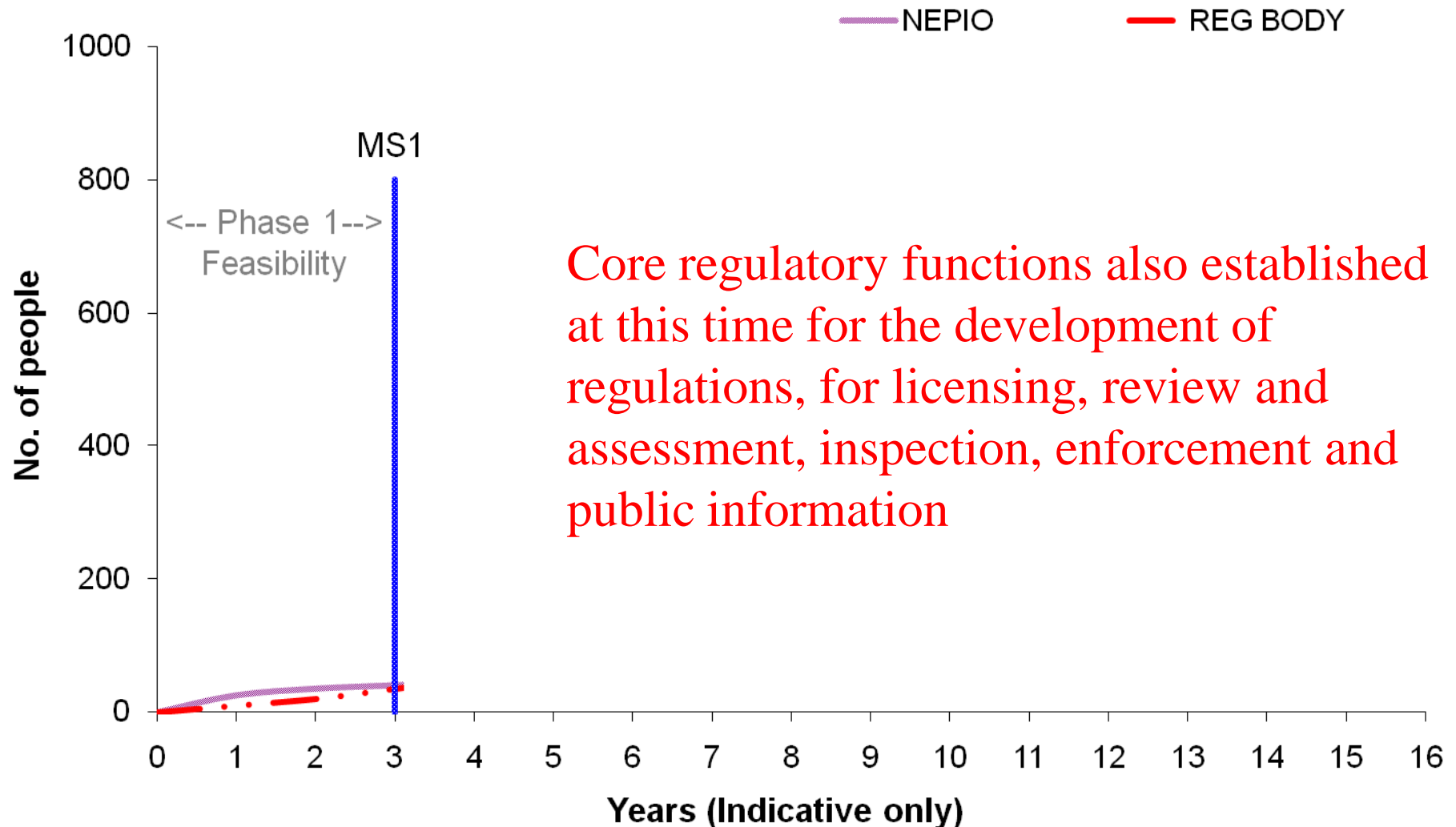
KEY CONSIDERATIONS

- The Objectives of the Nuclear Energy programme need to be clearly defined as this can greatly influence the competencies to be acquired by the Member State
- For effective Workforce Planning, the roles, responsibilities and functions of all the stakeholder organizations to be involved need to be clearly defined in Phase 1, even if such organisations are not yet fully established
- Member States must be realistic about the gaps in national capability and the potential to close these gaps within the timescales of the project
- As part of the WP process, the strategy for closing these gaps must be clearly defined and understood as it may have a significant impact on the Bid Invitation Specification (BIS)

Resource Requirements for Phase 1



Resource Requirements for Phase 1 (cont'd)



RECRUITMENT CHALLENGES IN PHASE 1

Lack of experience in phase 1 may be alleviated by:

- Contracting out whole work packages to experienced consultants, including requirements to utilise/train national staff in delivering the work package.
- Contracting with consultants to become 'temporary' staff working with nationals to deliver work packages, while developing national staff.
- Engaging senior consultants to 'coach' national staff in specific areas of competence.
- Organising national conferences/workshops where vendors and specialist support organisations can present their capabilities and services

RECRUITMENT CHALLENGES IN PHASE 1

Opportunities to gain experience outside MS include:

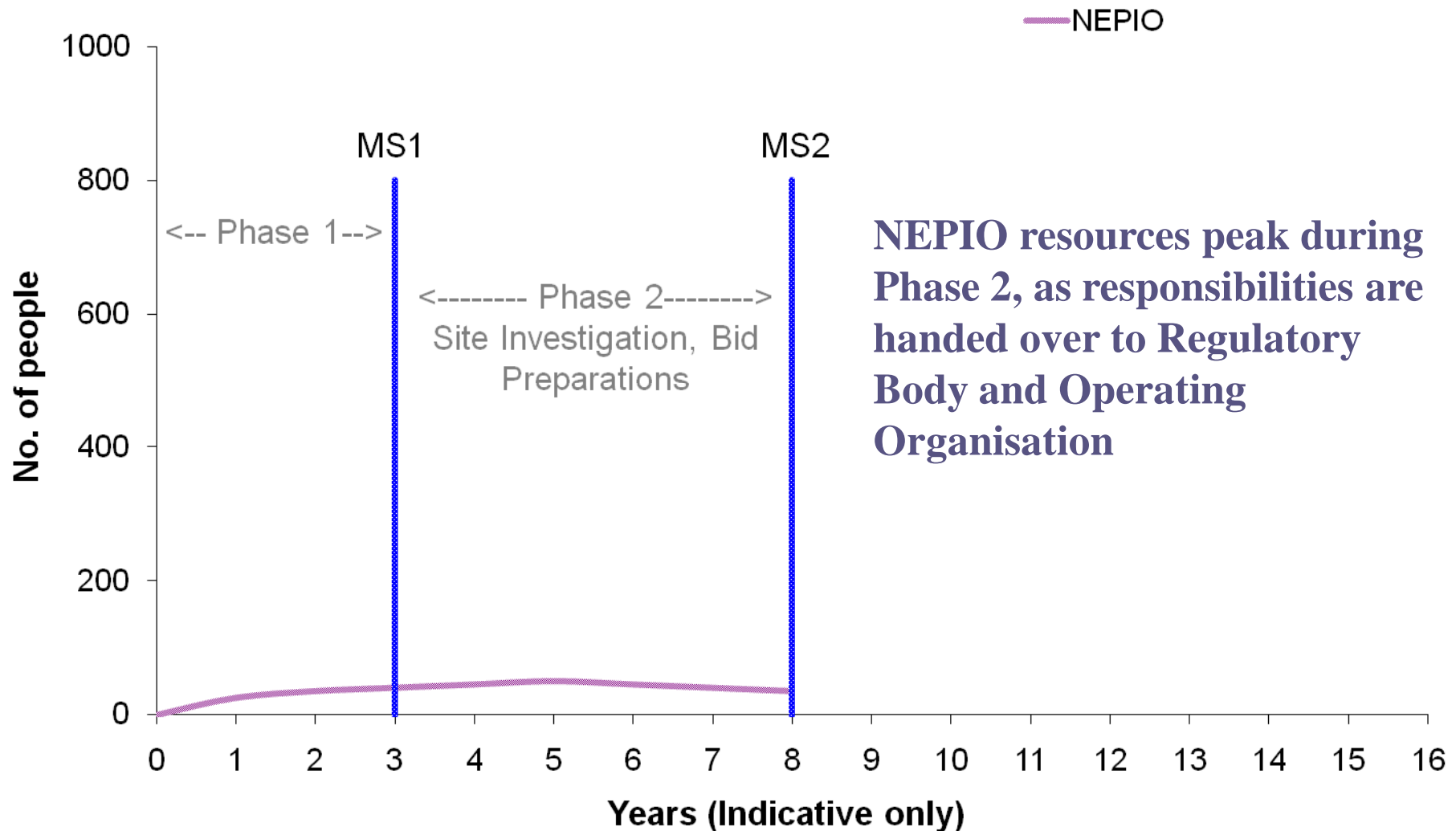
- Establishing Bi- and Multi-lateral relationships with governments, regulatory agencies, vendors, utilities, educational institutions, etc.
- IAEA Training courses, Fellowships and Internships.
- Formal courses of overseas study (e.g. vocational, under- and post-graduate programmes).
- Building staff training and development assignments into potential contracts with vendors, service providers, etc.
- Developing 'strategic alliances' with vendors/equipment suppliers whereby national organisations obtain licenses to manufacture components in-country, which can include training and qualification in the country of origin.

Human Resource Development-Phase 2

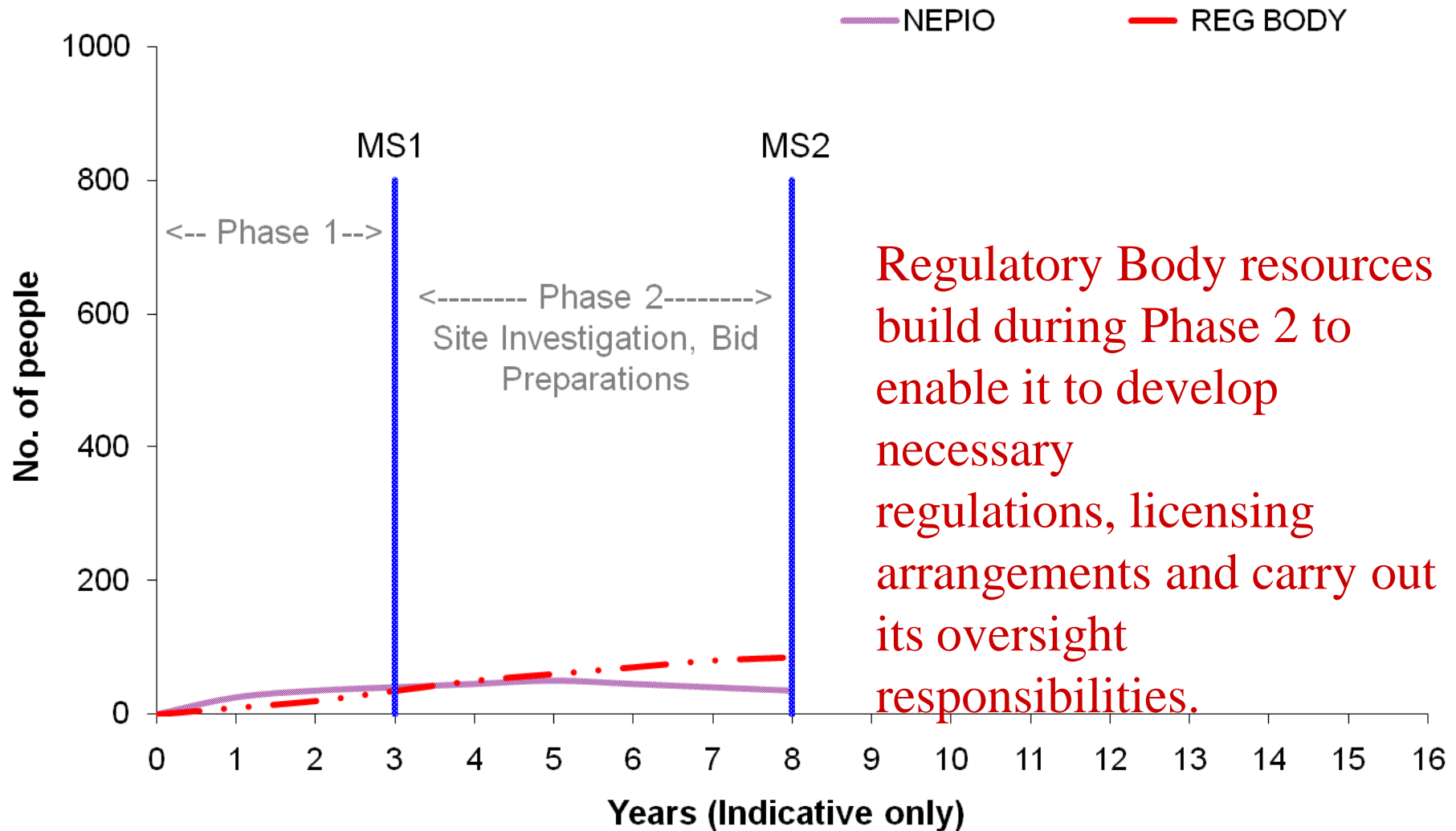
In preparation for inviting Bids to construct a first NPP:

- Sufficient human resources are in place to be an “Intelligent Customer” in Operating Organisation
- A Systematic Approach to the Training (SAT) of human resources needed for plant operation is initiated
- HR issues, including SAT requirements, are addressed in requirements for suppliers (turnkey assumed)
- Sufficient human resources available in Regulatory Body to develop licensing framework and processes
- Workforce/Staffing Plan(s) updated

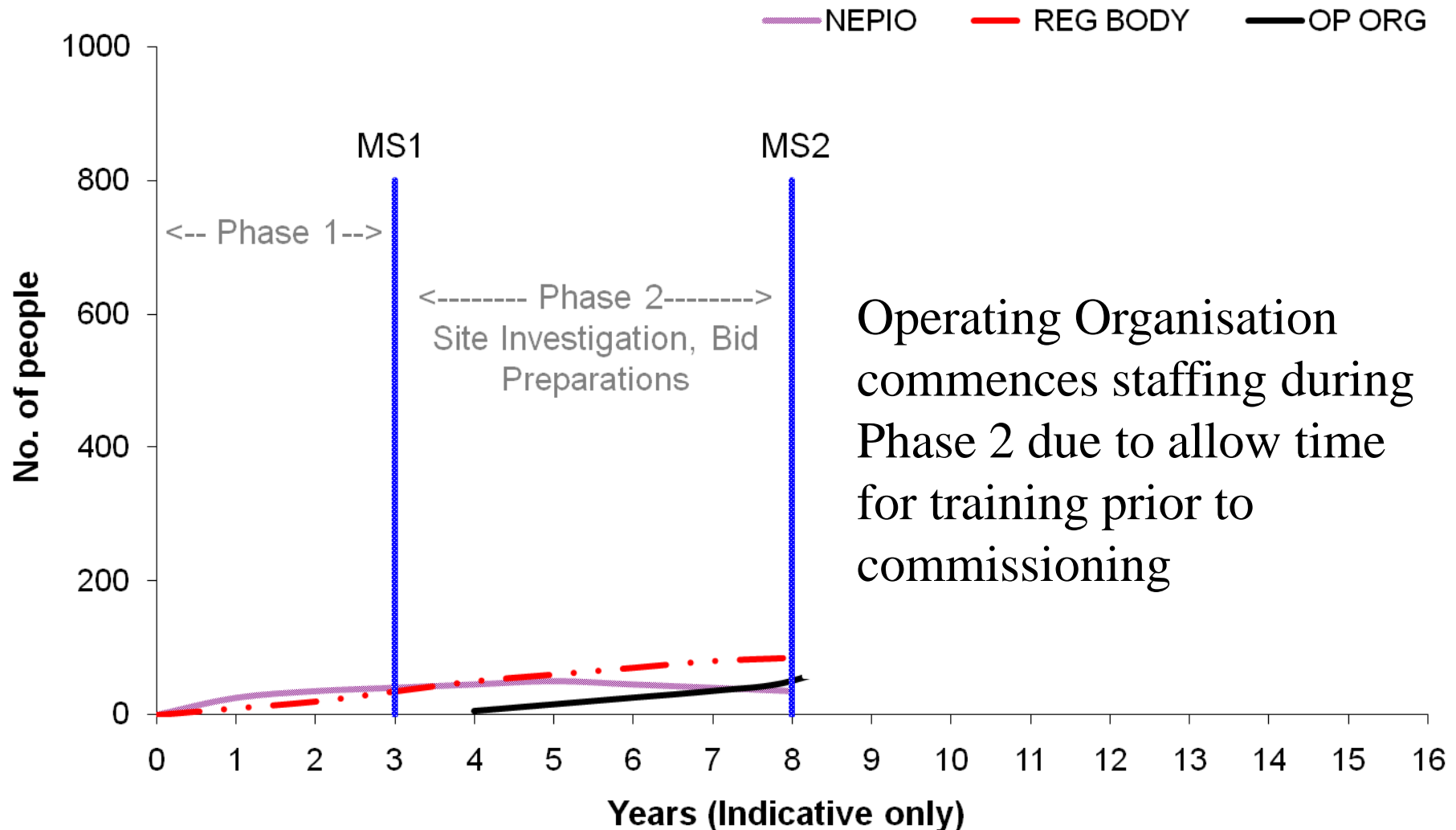
Resource Requirements for Phase 2



Resource Requirements for Phase 2 (cont'd)



Resource Requirements for Phase 2 (cont'd)

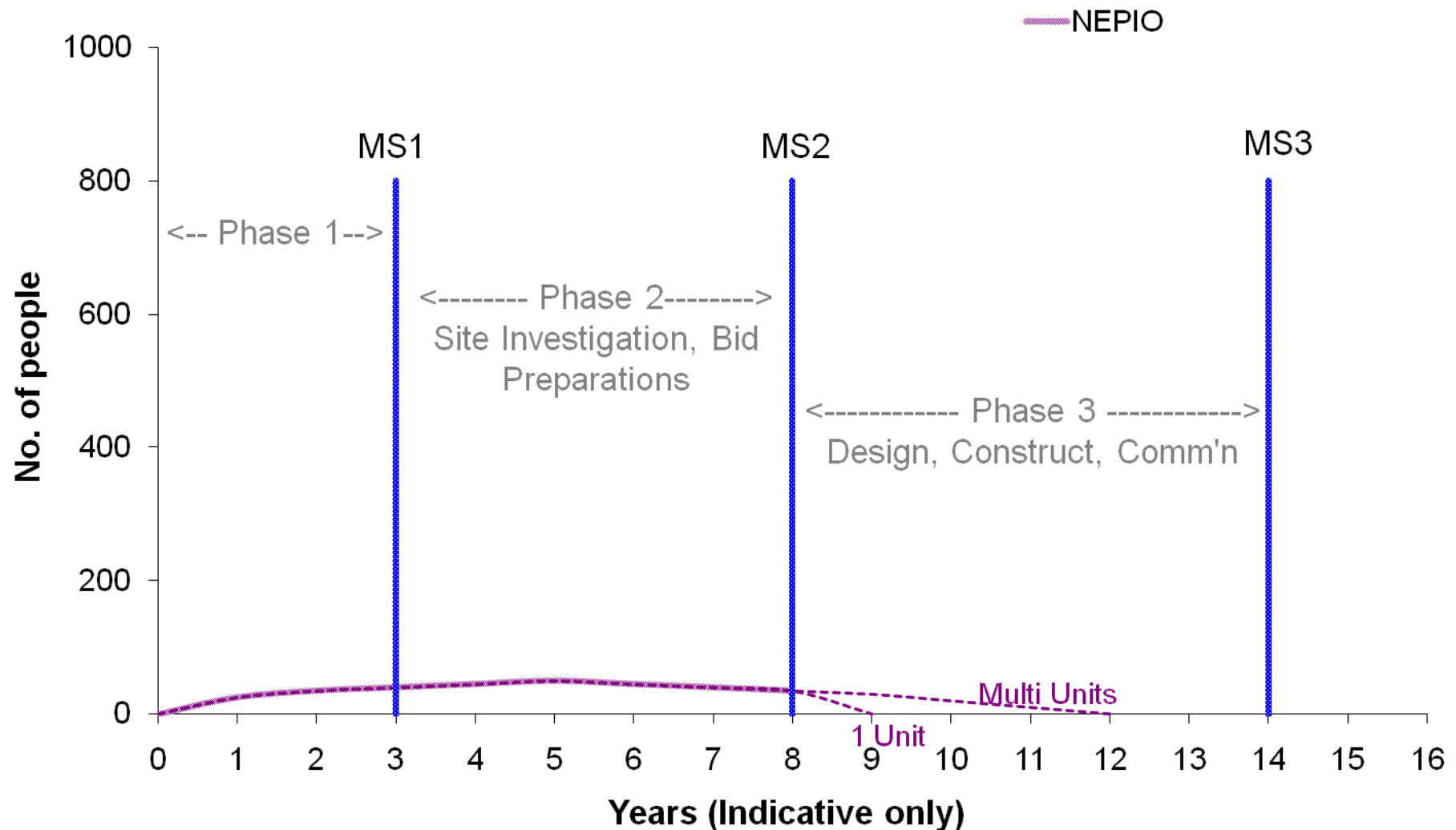


Human Resource Development- Phase 3

- All human resources to commission and operate the first NPP (Op Org) are put in place
- All human resources needed to manage licensing process (Reg Body) are in place
- Education and training programmes for continuing flow of qualified people are in place
- Workforce/Staffing Plan(s) updated

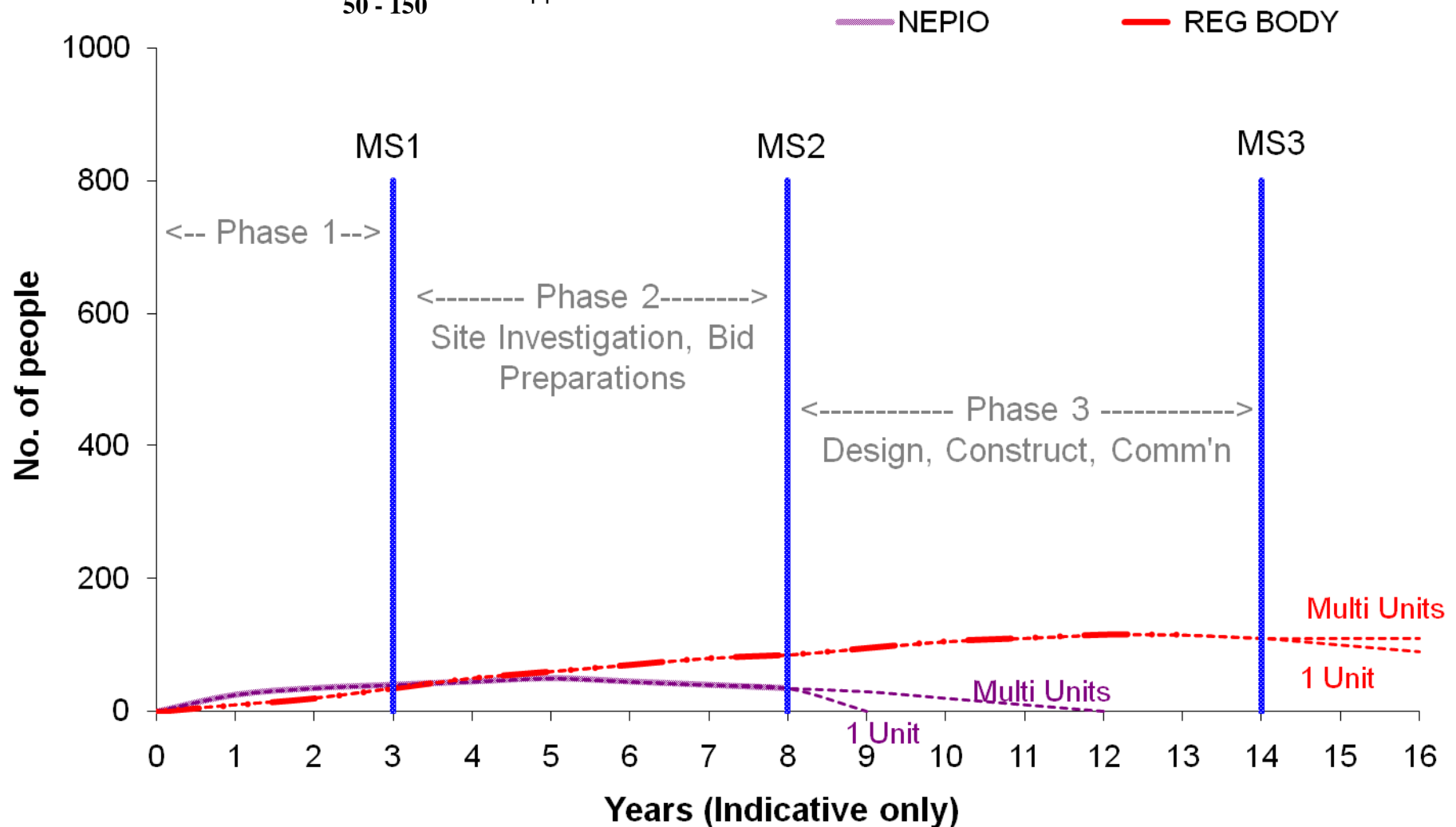
Resource Requirements for Phase 3

1. NEPIO = 10 --> 50 (Depending on Expert Group Support) --> 0 (close to)



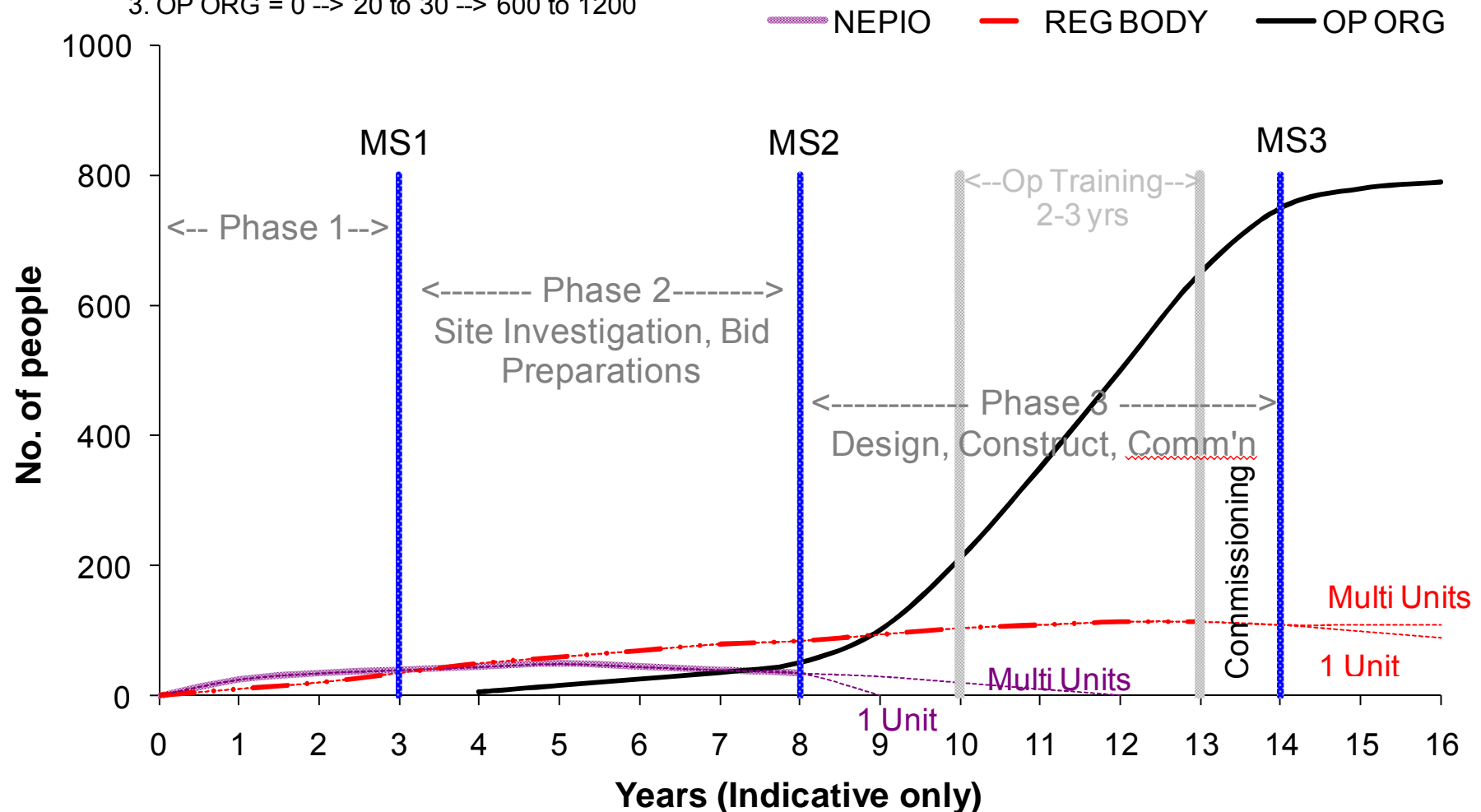
Resource Requirements for Phase 3 (cont'd)

1. NEPIO = 10 --> 50 (Depending on Expert Group Support) --> 0 (close to)
2. REG BODY = 1^{50 - 150} Tech Support



Resource Requirements for Phase 3 (cont'd)

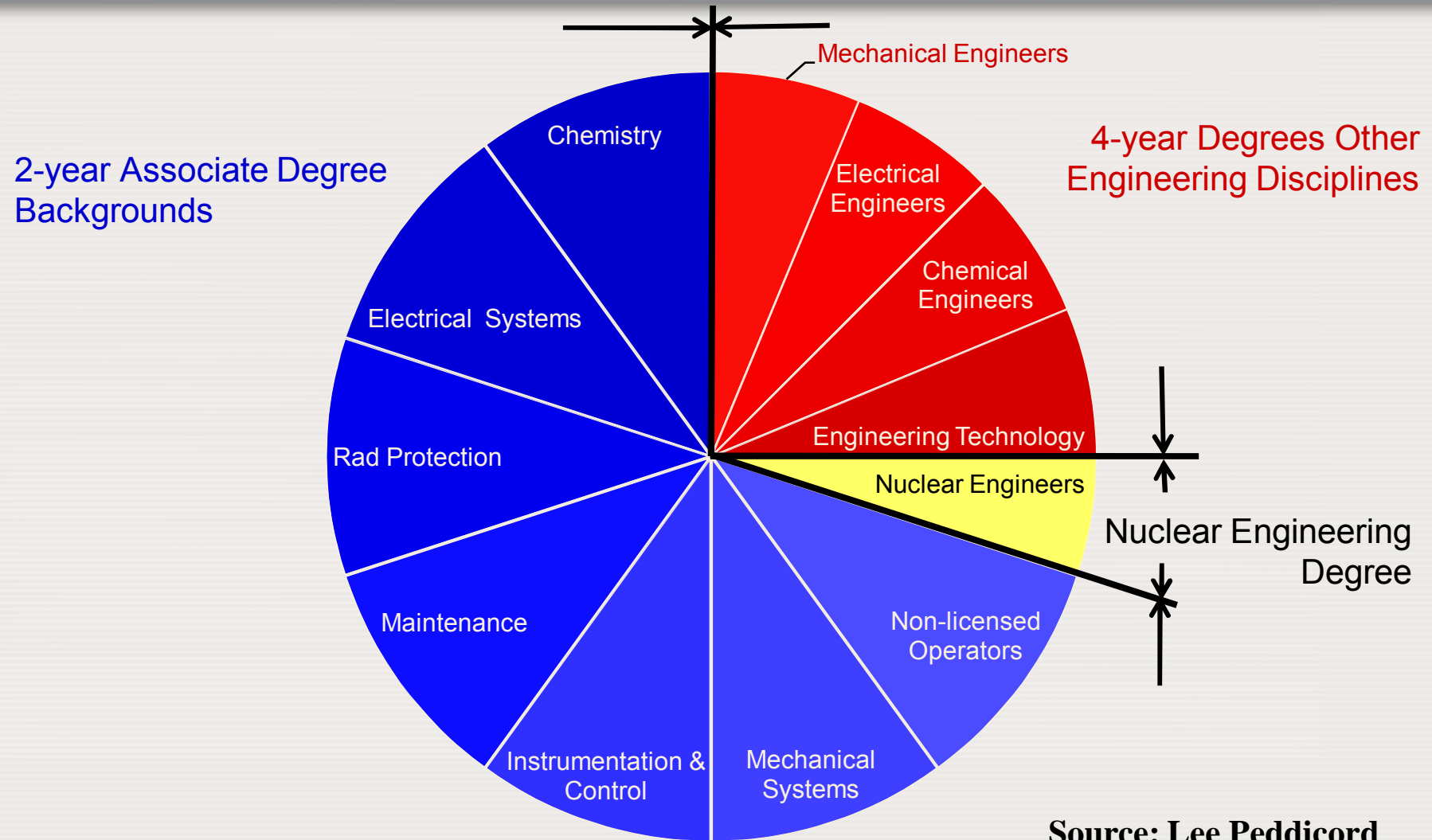
1. NEPIO = 10 --> 50 (Depending on Expert Group Support) --> 0 (close to)
2. REG BODY = 50 --> 150+Tech Support
3. OP ORG = 0 --> 20 to 30 --> 600 to 1200



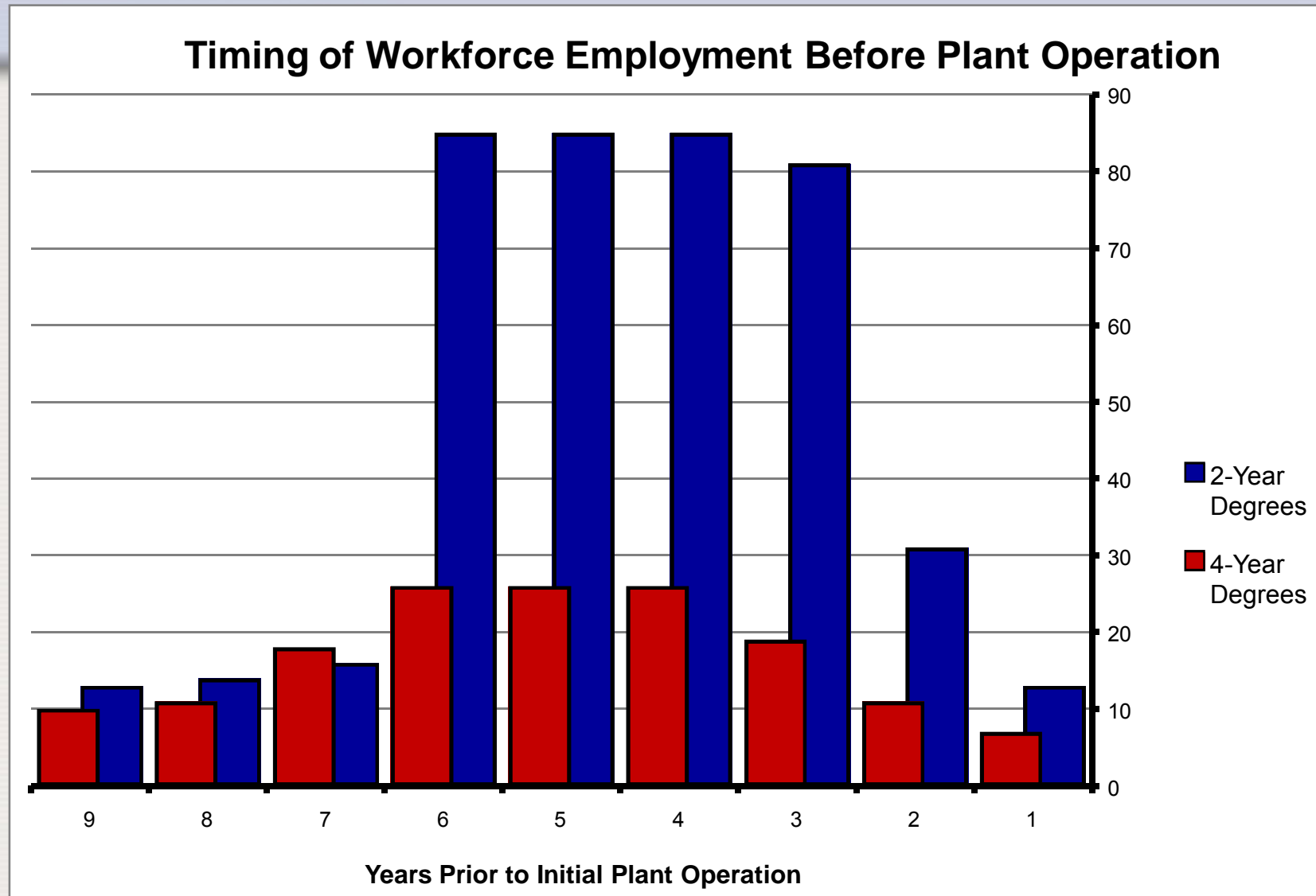
Key Education and Training Considerations

- Majority of permanent workforce is needed for the Operating Organisation, once NPP is commissioned; typical workforce for a 2-Unit NPP is 600-1200 personnel
- Around 65 - 80% of workforce are required at non-graduate level i.e. 'Technicians'
- Of the graduate workforce (20 – 35%) only around 20% (or ~ 5% of total workforce) need a Nuclear engineering background
- Training/experience requirements for very specialist roles can be 5-10 years
- In Regulatory Body, % of Graduates is much higher (> 50%) but specialist Technicians still needed

Example Distribution of Disciplines for the Nuclear Workforce



Source: Lee Peddicord
TAMU, USA



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ANY QUESTIONS?



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