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Analyzing the Costs of Alternative Army Active/Reserve Force Mixes

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Agenda: Illustrative Analysis of Alternative Force Mixes at the Community Level

- Tasking
- Principal Objectives
- Analytic structure
  - Scope of analysis: what's in and what's out
  - Model inputs and outputs
  - Sources of data
- Examples for Brigade Combat Teams (BCTs)
- Summary and Conclusions

- Develop an easy-to-use costing capability to evaluate Active Component/Reserve Component (AC/RC) force mixes – a computer-based tool
- Wide range of warfighting communities, ultimately in all Services. Community = set of like units
- Capture alternative operational/rotational use policies
- Cost types: personnel, operating, procurement, infrastructure
- Emphasize Army first

IDA | Principal Objectives

- Provide overview of costs and benefits of alternative AC/RC mixes
- Work with Services and other organizations to develop agreed upon costing approach and cost factors

IDA | Prior Work Has Focused on Two Comparisons

- Unit cost comparisons
  - RC units cheaper because they cost so much less when they are not mobilized
- Cost of deploying a single unit
  - AC and RC costs much closer because it takes more RC units to generate a single deployed unit
- Both points are correct, but
  - The former ignores the reduced rotational capability of RC
  - The latter ignores the additional strategic depth provided by an RC capable of providing a given level of rotational potential
- Analyses of force mix alternatives should capture rotational potential, strategic potential, and cost

IDA | Scope of Analysis

- Included
  - Costs
    - Personnel
    - Operations
    - Procurement (optional)
    - Infrastructure
    - Deployment
  - Characteristics of rotations
    - BOG:Dwell and MOB:Dwell constraints
    - Requirement to deploy
    - Deployment duration
    - Tempo during deployment
    - Amount of RC mobilization time not deployed
    - Overlap of deployments
  - Dwell period resource levels
    - Reflects variations in readiness during Army Force Generation (ARFORGEN) cycle
- Excluded
  - Possible differences in unit effectiveness
  - Transition costs
  - Rate of force generation in surge
  - Variation in infrastructure cost factors as a function of AC/RC mix
- Implications of exclusions
  - Results only a starting point for analysis of alternatives
  - Results likely less reliable for larger changes in AC/RC mix

IDA | Model Inputs and Outputs

- Inputs
  - Unit type – roughly 3000 covered at Standard Requirements Code (SRC) level
  - AC and RC force levels
  - Cost factors – from existing models
  - BOG:Dwell (AC) and MOB:Dwell (RC)
  - Choice of whether available units deploy
  - Deployment duration and level of activity
  - Transit time or overlap time
  - Pre-deployment training, post-deployment adjustment periods (RC)
  - Dwell-period resource levels (aim points) – and extra training days for RC
  - Equipment replacement, if desired
- Outputs: Community-level costs and capability
  - Strategic potential – total force level
  - Rotational (or operational) potential – number of deployable units
  - Average annual cost

IDA | Three Sources of Army Cost Factor Data

- Force and Organizational Cost Estimating System (FORCES) Cost Model – force structure-related costs
  - Non-deployed operating costs
  - Most personnel-related costs, including medical costs and retired pay accrual
  - Base operations and indirect support costs
  - Equipment costs
- Army Military-Civilian Cost System (AMCOS) – additional personnel-related costs
  - Annualized personnel accession costs
  - Annualized education and training costs
- Army ConOps Costing Model – deployment-related costs
  - Additional pay for RC personnel
  - Additional operating costs
  - Transportation costs

IDA | Inputs for Illustrative BCT Analysis

- AC and RC force levels for each kind of BCT
  - Infantry BCT (IBCT), Stryker BCT (SBCT), Armored BCT (ABCT)
- BOG:Dwell (AC) 1:2 and 1:3 and MOB:Dwell (RC) 1:4 and 1:5
- Forces deploy when available
- Deployment duration – 9 months for both AC and RC
- Transit time – one week each direction
- Pre-deployment training, post-deployment adjustment periods (RC): total of three months
- Default levels of dwell-period resources (aim points). Reflect policy regarding variation in readiness during phases of the ARFORGEN cycle
- Initially exclude equipment replacement costs, then include them

	1:2 AC / 1:4 RC				1:3 AC / 1:5 RC			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
BCT Quantity (AC/RC)	**73 (45/28)**	**65 (37/28)**	**60 (30/30)**	**60 (24/36)**	**73 (45/28)**	**65 (37/28)**	**60 (30/30)**	**60 (24/36)**
Infantry BCT	40 (21/19)	35 (16/19)	32 (13/19)	32 (11/21)	40 (21/19)	35 (16/19)	32 (13/19)	32 (11/21)
Stryker BCT	9 (8/1)	9 (7/2)	9 (6/3)	9 (4/5)	9 (8/1)	9 (7/2)	9 (6/3)	9 (4/5)
Armored BCT	24 (16/8)	21 (14/7)	19 (11/8)	19 (9/10)	24 (16/8)	21 (14/7)	19 (11/8)	19 (9/10)

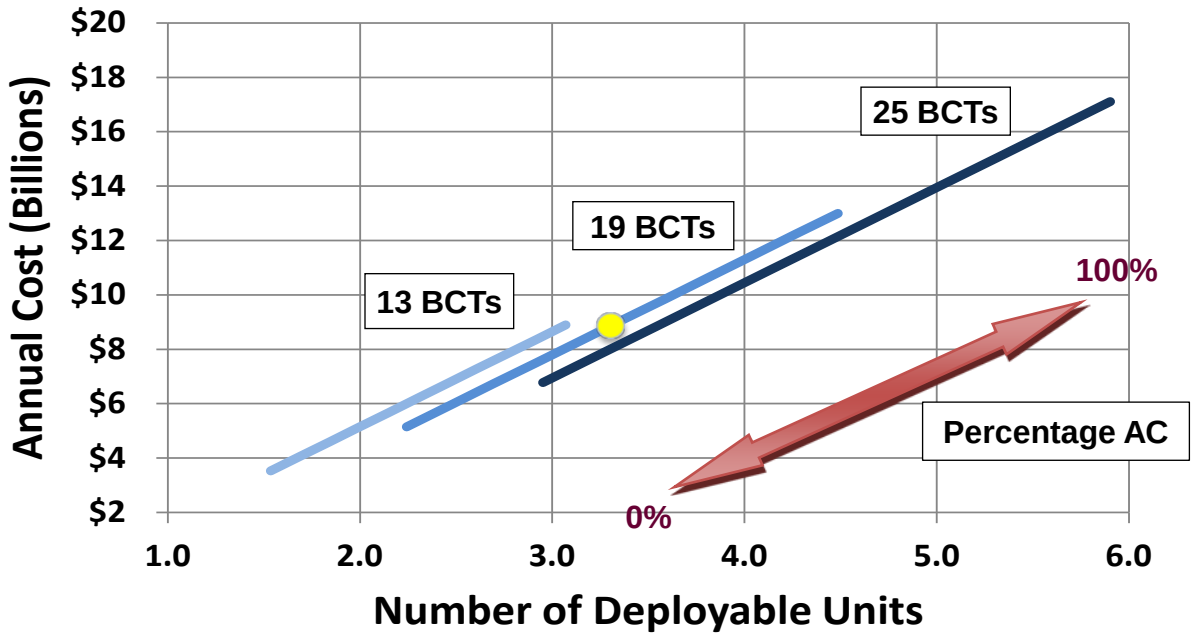
IDA | Analysis of Alternative BCT Force Structures

Model provides community-level information on strategic potential, operational potential, and annual cost

	1:2 AC / 1:4 RC				1:3 AC / 1:5 RC			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
BCT Quantity (AC/RC): Strategic Potential	**73 (45/28)**	**65 (37/28)**	**60 (30/30)**	**60 (24/36)**	**73 (45/28)**	**65 (37/28)**	**60 (30/30)**	**60 (24/36)**
IBCT	40 (21/19)	35 (16/19)	32 (13/19)	32 (11/21)	40 (21/19)	35 (16/19)	32 (13/19)	32 (11/21)
SBCT	9 (8/1)	9 (7/2)	9 (6/3)	9 (4/5)	9 (8/1)	9 (7/2)	9 (6/3)	9 (4/5)
ABCT	24 (16/8)	21 (14/7)	19 (11/8)	19 (9/10)	24 (16/8)	21 (14/7)	19 (11/8)	19 (9/10)
Rotational Deployability: Operational Potential	**18.1**	**15.6**	**13.7**	**12.7**	**13.9**	**12.0**	**10.6**	**9.9**
Annual BCT Community Cost	**$36.4B**	**$31.4B**	**$27.4B**	**$25.0B**	**$33.0B**	**$28.5B**	**$24.9B**	**$22.7B**

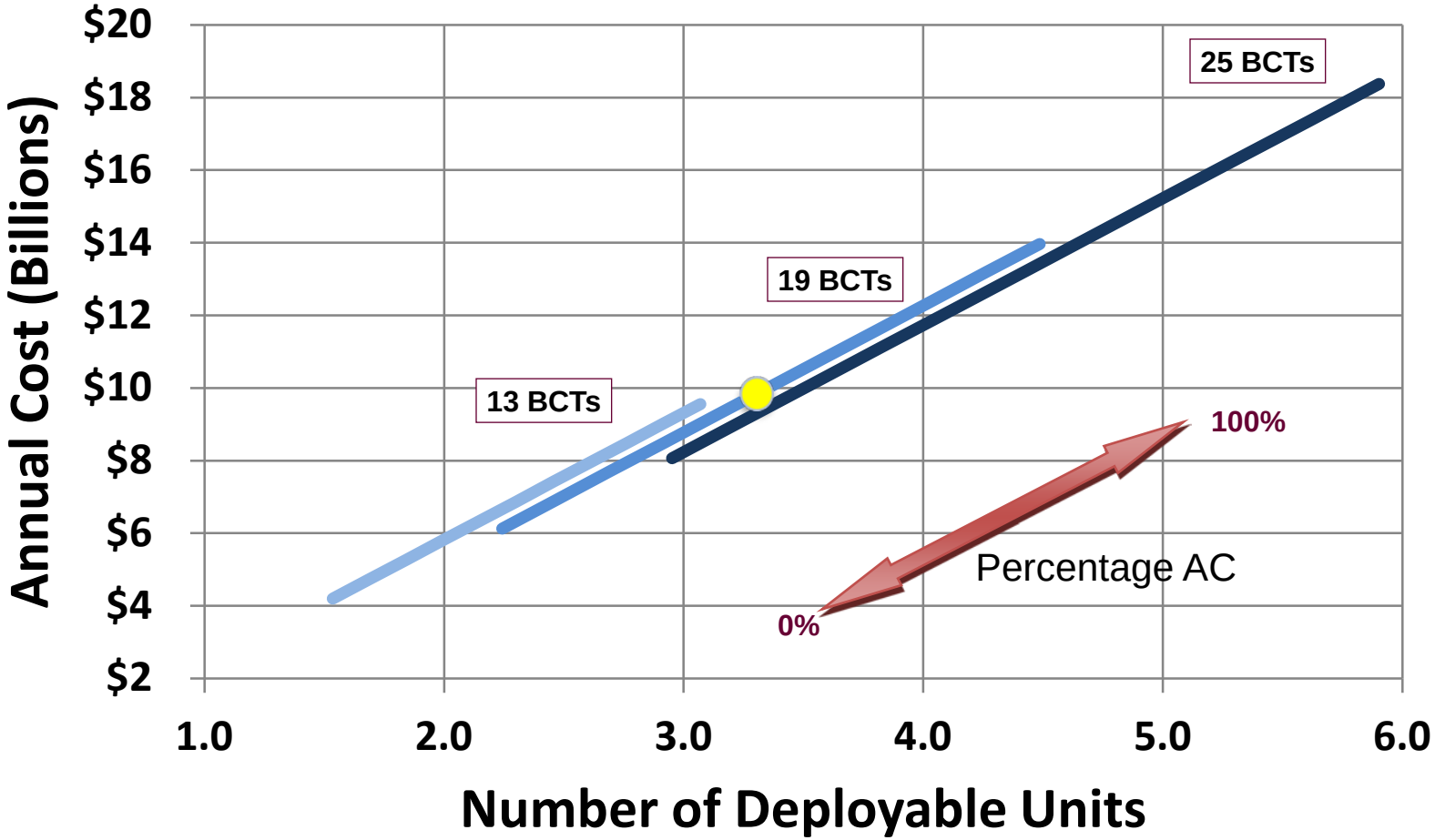
Cost and Capability of Alternative AC/RC Mixes: ABCT Community at 1:3/1:5

- For the ABCT community, blue lines trade cost against the number of deployable units, which rises with the percent AC
- Moving along a community-size line from right to left shows how cost and deployable potential change as RC is substituted for AC
- Shows cost of meeting both strategic requirements (community size) and operational requirements (number of deployable units)
- For ABCTs, you can meet deployment requirements, increase force structure, and save money with a relatively Reserve-intensive force



IDA | Effect of Adding Equipment Replacement Costs

- Equipment life specified in terms of years of use (30 years in this case)
- Use is assumed only when present in units – a function of aim points
- Lines move closer together, but it still is cheaper to generate a given number of deployable units from RC – this is generally not the case for aviation units



Summary and Conclusions

- Modeling Effort
  - We can use Army models and cost factors to quickly estimate the cost and capabilities associated with alternative AC/RC mixes of BCTs
  - We developed a new way to look at the cost and capability of entire communities, which may help compare a wide range of alternatives
- Analytical Results
  - In many cases, as long as you can meet operational requirements, the more you rely on the RC, the more force structure you can afford
- Caveats
  - Readiness is not currently addressed
  - Some aspects of costs are not considered (transition costs, possible variability of infrastructure cost factors)
- Model provides a better starting point for analysis of AC/RC force mix alternatives, not conclusions

- Develop initial capability for Marine Corps, Air Force, and Navy
- Allow users to vary some infrastructure assumptions
- Incorporate into model balancing demand for forces and supply of forces
  - Explicitly incorporate speed of surge response
  - Stochastically generate 20 years of demand for forces
  - Observe deployment shortfalls
  - Evaluate many alternative force structures
  - Derive efficient frontier

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

We drew on the Army's extensive unit-level cost models and databases to build an automated active/reserve force mix analysis model that allows us to quickly estimate the cost and capabilities associated with alternative active component/reserve component (AC/RC) mixes for a community chosen by the user. By community we mean the set of units of a given type. Our modeling calculates the average annual cost of supporting and using the units, both active and reserve, in a community on a rotating basis. Personnel costs, operating costs, some overhead costs, equipment replacement costs, and deployment costs are included. Equipment replacement costs can also be captured. In addition to cost, it focuses on two dimensions of capability:

- Surge capability
- Steady state operational presence levels

In this paper, we illustrate the use of our model by analyzing AC/RC force mix alternatives for various kinds of brigade combat teams.
At this time, the model does not capture all the elements that pertain to active/reserve force mix decisions; such as unit effectiveness, the transition costs of establishing units in one component and disestablishing them in another, responsiveness under surge conditions, or possible variability in some infrastructure cost factors.
Our current modeling provides a better-informed starting point for analyses of AC/RC force structure alternatives. Extensions of this work are incorporating flexibility in the specification of infrastructure costs factors and are addressing how well a given force structure can respond to potential surge requirements.
The work will go beyond active-reserve mix questions to give the Department of Defense a tool for evaluating alternative force structures in the context of demand and programmatic costs.

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