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## Realizing A Green New Deal: Lessons From World War II

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## Realizing A Green New Deal: Lessons From World War II

### Abstract

Many activists in the United States are working to build a movement for a Green New Deal transformation of the economy in order to tackle both global warming and the country's worsening economic and social problems. To this point, Green New Deal advocates have been far more interested in discussing the programs to be included than in how to achieve the desired transformation. Helpfully, we have the experience of World War II to provide some guideposts. This paper begins by highlighting the enormity and speed of the US economy's wartime transformation from civilian to military production. Then, it describes the evolution and evaluates the effectiveness of the most important public agencies and policies used to achieve it. It concludes with a brief discussion of the relevance of this conversion experience to efforts to advance a Green New Deal transformation of the US economy.

### Keywords

Green New Deal, economic conversion, World War II, state planning

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## **1. Introduction**

We are hurtling towards a climate catastrophe. Motivated by the growing costs of the emerging climate crisis—extreme weather conditions, droughts, floods, warming oceans, rising sea levels, fires, ocean acidification, and soil deterioration—many activists in the United States are working to build a movement for a Green New Deal transformation of the economy in order to tackle both global warming and the country's worsening economic and social problems.

To this point, Green New Deal advocates have been far more interested in discussing the programs to be included than in how to achieve the desired transformation, which will, out of necessity, require the curtailment or outright suppression of the production of some goods and services, the rationing of limited supplies of other products, and the development and production of entirely new goods and services. Helpfully, we have the experience of World War II to provide some guideposts. Then, a US government-directed mobilization rapidly converted the economy from civilian to military production. And while it would be a mistake to imagine that this conversion experience can provide a readymade blueprint for managing the transformation we now seek, there is much we can learn from it, both positive and negative.

In what follows, I first highlight the enormity and speed of the wartime transformation. Then, drawing on several detailed studies of the mobilization process, I describe the evolution and evaluate the effectiveness of the most important public agencies and policies used to achieve it. I conclude with a brief discussion of the relevance of this conversion experience to our efforts to advance a Green New Deal transformation of the US economy.

## **2. World War II-era Planning and Accomplishments**

Central to the World War II-era conversion from a civilian oriented to a military oriented economy was the enormous and rapid expansion in military spending over the years 1940-1943. Military spending grew by an incredible 269.3 percent in 1941, 259.7 percent in 1942, and 99.5 percent in 1943. As a consequence, military spending as a share of GDP rose from 1.6 percent in 1940 to 32.2 percent in 1943. That last year, federal spending hit a record high of 46.6 percent of GDP and remained at over 41 percent of GDP in each of the following two years (Tassava 2008).

The production of aircraft and munitions and shipbuilding soared. In 1943 and 1944 alone, the United States was responsible for approximately 40 percent of all the munitions produced during World War II.

As Paul A. C. Koistinen summarizes:

By the end of 1943, then, the United States had won the battle of production at home. It could manufacture and supply the tools of war for itself and its allies at needed levels. That goal was reached without excessively squeezing the civilian population, which in 1944 spent roughly 10 percent more on consumer goods than it had in 1939. (Koistinen 2004: 342)

Although this wartime experience is often celebrated as a “production miracle,” it was not. For example, there is little difference between the years 1921-24 and 1941-1944 in the growth of industrial production or the growth in real gross nonfarm product (Vatter 1985: 22). Placing the US experience in international context reinforces the point. If we use the distribution of world manufacturing production in the period 1926-1929 as a reference point, “the United States in the peak year 1944 was producing munitions at almost exactly the level it should have been” (Koistinen 2004: 498).

The explanation for these two significantly different views of the period is that the transformation involved far more than the increase in military spending. There was also the curtailment or outright suppression of the production of many industries, the rationing of limited supplies of many goods, and the development and production of entirely new goods and services. For example, civilian automobile production was stopped, tires and food were rationed, and synthetic rubber was created and produced in significant amounts. Between 1940 and 1944, the total production of non-war goods and services actually fell by more than 10 percent, from \$221.7 billion to \$198.9 billion (in 1958 dollars) (Rockoff 1998:83).

Thus, the tremendous gains in US military production were achieved, and in a relatively short period of time, not because of some impossible-to-repeat production miracle, but because a government-directed mobilization succeeded in fully employing the country’s resources while shifting their use from civilian to military production.

We turn now to an examination of the development and operation of the three mobilization agencies—the National Defense Advisory Commission, The Office of Production Management, and The War Production Board—that were central to that successful transformation.

### **3. The National Defense Advisory Commission**

Faced with strong isolationist beliefs by many members of Congress and among the population, even as German aggression pushed Europe towards war, the US government was slow to pursue a military buildup. However, Germany’s rapid invasions of Belgium, the Netherlands, France, and Luxemburg in May 1940 changed the political moment, shifting popular sentiment in favor of action to support England and strengthen the US military in preparation for possible war.

Rather than seek Congressional approval for a new mobilization agency, which might give noninterventionists as well as military supporters of a World War I-style, corporate-dominated War Industries Board (WIB) an opportunity to push their respective positions, Roosevelt reactivated, in late May, an already existing World War I-era agency, the National Defense Advisory Commission (NDAC). In sharp contrast to the WIB, the NDAC had no supreme leader, limited powers, and included members representing a range of economic and social concerns.

#### **3.1. The NDAC Structure**

The NDAC was a complex agency, organized around seven areas of specialization or divisions, each with its own appointed head: Industrial Production, Industrial Materials, Labor, Price

Stabilization, Farm Products, Transportation, and Consumer Protection. There was no overall administrative hierarchy, so coordination, such as it was, had to be achieved through the work of a Liaison Committee staffed by representatives from each division. The committee met weekly to exchange information and organize special working groups to study and recommend policies around specific tasks such as the development of standardized military procurement contracts or the promotion of small business participation in procurement activity.

The NDAC's primary charge was to help business produce the goods and services needed by the military and, because of this focus, its work soon came to be dominated by just two of the divisions—the Industrial Production Division (led by William S. Knudsen, the president of General Motors Corporation) and the Industrial Materials Division (led by Edward R. Stettinius Jr., board chairman of the United States Steel Corporation). The other divisions were largely ignored by industry leaders and quickly sidelined.

The Industrial Production Division (later renamed the Production Division) was tasked with “facilitating the manufacture of munitions not normally produced by the economy” and organized into 8 sections, the most important being aircraft; ammunition and lite ordnance; and tanks, trucks, and tractors. Each section had its own appointed head, typically a “dollar-a-year man” who remained employed by one of the firms whose production was to be encouraged by the section. Section heads generally relied on industry advisory committees, as well as trade association officials, to help them with their work.

The Industrial Materials Division served the same function for industrial materials that the Industrial Production Division did for finished products. It was divided into three main subdivisions: mining and minerals products, which was further divided into sections representing products such as iron and steel, copper, aluminum, and tin; agricultural and forest products, which was further divided into sections for textiles, leather, paper, rubber, and the like; and chemical and allied products, which was subdivided into sections for petroleum, nitrogen, etc. These sections also made use of dollar-a-year men, industry advisory committees, and trade association officials. In fact, in many cases, trade association officials were placed in charge of the sections that were responsible for the industries they were paid to represent (Koistinen 2004: 23).

The most important change to the NDAC came in June 1940, with the creation of the Office for Coordination of National Defense Purchases. Donald M. Nelson, a former vice president of Sears, Roebuck and Company, was appointed its head. Nelson's job was to ensure good working relations between the NDAC and the military. Toward that end, his office worked to monitor and standardize contract negotiations between military procurement agencies and their corporate clients, develop simplified product specifications to enlarge the pool of potential suppliers, encourage “distributive buying” practices to spread orders among multiple suppliers, and promote the use of negotiated contracts over competitive bidding.

### **3.2. Challenges**

The NDAC proved to be a rather ineffective mobilization agency for three main reasons. First, the military proved unable to translate its weapons needs into the goods required for their production. Second, many of the businesses that were central to the mobilization were reluctant

to either expand their capacity to produce or convert from civilian to military production. Third, with no central authority or powers of compliance, the NDAC found it difficult to develop an overall production plan for the economy or overcome military and corporate resistance to its initiatives.

### *3.21. Military Procurement*

Each military branch—Army, Army Air Forces, and Navy—had its own procurement agency, purchasing systems, and contractor relationships. It was the job of the Army-Navy Munitions Board (ANMB) to aggregate branch needs and negotiate with the NDAC and its various divisions over how best to satisfy them. However, the procurement agencies, operating in terms of weapons systems and troop numbers, had no detailed knowledge of the materials required to produce what they desired. As a result, the ANMB was unable to offer the NDAC guidance about the military's immediate and long-run needs in terms of finished products and their required components, parts, and materials.

The fact that the military was continually working to improve its weapons, which meant that its material requirements were continually changing, added a further complication. Moreover, since the United States was still not at war, the military found it challenging to make longer-term projections of its weapons needs and by extension material requirements.

### *3.22. Corporate Resistance*

Many corporations were reluctant to expand their facilities to accommodate growing defense needs. Most of the corporations represented in the Production Division already had working relations with the military and were receptive to increasing sales to them. However, the post-World War I experience left them leery of investing in new plant and equipment. The military had terminated their contracts almost immediately at war's end, with no compensation for what suddenly became overbuilt plants and unsold inventories. As a consequence, corporations were now demanding government-provided financial inducements or guarantees to protect them against the uncertainties surrounding the present mobilization before they considered new major investments.

Other firms, primarily those that fell under the jurisdiction of the Materials Division, were outright opposed to expansion “even when the government offered generous loans and subsidies” (Lichtenstein 1987: 39). Their opposition caused few problems during most of 1940, because there was still considerable slack in the economy. But by August, shortages of some materials had begun to negatively affect the military buildup.

Aluminum was one of the materials in short supply and Alcoa, the only major producer of the metal, aggressively resisted expanding its production capacity even though shortages were forcing delays in aircraft production. Moreover, Stettinius Jr., the head of the Industrial Materials Division, strongly backed the company (Klein 2013: 161). A similar situation existed with steel, with steel executives arguing that there was no need for capacity expansion while critical activities such as ship building and railroad car manufacturing ground to a halt because of a lack of supply.

Many of the shortages could have been managed if large producers of consumer durables had responded positively to NDAC requests that they either reduce their production or convert to military production. But most were enjoying substantial profits for the first time in years and unwilling to abandon their civilian markets. The automobile industry drew the most attention because of its heavy resource use. However, given its limited authority over firm decision-making, the best the NDAC could achieve was a Detroit promise to delay new model changes and implement a minor reduction in future production.

### *3.23. Organizational Weakness*

The NDAC was charged with approving all military procurement contracts to ensure there would be sufficient capacity in the economy to meet military demands, no conflicts of interest in the awarding of contracts, and fair contractual terms. However, the military, especially the Army, preferred to keep the NDAC at arm's length and continue negotiating its own contracts with individual firms. Thus, more often than not, military procurement agencies deliberately submitted their procurement contracts for approval after the negotiations had been completed, leaving the NDAC with little choice but to approve them (Klein, 2013: 110).

The leading firms that anchored NDAC's key divisions generally found common cause with military procurement agencies in seeking to sideline the agency, since they were also opposed to giving the government greater authority over their activity.<sup>1</sup> The alliance was further cemented by the fact that military procurement agencies remained determined to channel most of their contracts to these same leading firms. In fact, "in the six months after June 1940, some 60 percent of the \$11 billion in prime contracts awarded by the armed services went to but twenty firms, and 87 percent went to only 100 companies" (Lichtenstein 1987: 39).

At the same time, in many ways the NDAC's lack of power also worked to the disadvantage of the military and its corporate suppliers. The combination of a fast-growing military demand for, and slow growing supply of, key materials and machines meant a growing number of shortages and the need for a priority allocation system to guarantee the desired flow of resources to the military's prime contractors. In late October 1940, Roosevelt established an NDAC Priorities Board and gave it statutory powers to enforce ANBM determined priorities in support of military production and construction activity. The board then set up special priority committees for those industries producing commercial aircraft, machine tools, iron and steel, aluminum, and synthetic rubber.

The military enjoyed the sole power to assign a range of priorities which could be placed on selected goods deemed essential to military production and construction. The ANMB was to communicate the priority rankings to the NDAC Priorities Board and, once approved, the relevant priorities committees were to ensure that the priority goods were made available for purchase by the designated defense contractors. However, it didn't take long for military procurement agencies to by-pass the ANMB and make their own priority requests for goods and materials without regard to their availability or the needs of civilian and foreign producers.

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<sup>1</sup> In fact, big business employed a number of strategies to ensure the public would see them, rather than the government, as the true heroes of the war. See Wilson (2016: Chapter 3) and Mason (2017).

The result was a breakdown in the priority system. Production plans were stymied as firms fought to access priority goods. Military contractors and civilian producers began hoarding materials and machinery, causing general and regional shortages of components, equipment, materials, and workers, all of which set back the defense effort and overall economic growth.

### **3.3. Achievements**

One of NDAC's greatest contributions to the war effort was its work in support of two initiatives designed to overcome the early corporate reluctance to invest. The NDAC, and especially its Production Division, worked closely with munitions producers to win Congressional approval of an accelerated depreciation schedule and the creation of a new federal agency, the Defense Plant Corporation (DPC), that was empowered to directly finance new plant construction. These two initiatives helped jump start the industrial expansion in a number of critical industries, most importantly the aircraft industry, shipbuilding and ship repair, and the machine tool industry.

The accelerated depreciation schedule enabled firms to significantly reduce their tax liability. It quickly produced results, encouraging \$6.5 billion in new investments, some 20 percent of all private fixed investment undertaken during the war (Bossie and Mason 2020: 5).

The establishment of the DPC was far more consequential. Recognizing the need to rapidly expand the capacity of the manufacturing sector to produce war goods, Congress passed a series of amendments which allowed the depression-era Reconstruction Finance Corporation (RFC) to create new subsidiaries "with such powers as it may deem necessary to aid the Government of the United States in its national defense program." The DPC was one of those new subsidiaries.

Since the RFC had independent borrowing authority, the DPC was able to directly finance the expansion of facilities deemed critical to the military buildup without needing Congressional approval. The DPC kept ownership of the new facilities it financed, but planned the construction with, and then leased the new facilities for a minimal fee to, a predetermined contractor who would operate them. The DPC eventually financed and owned some one-third of all the plant and equipment built during the war. At the war's end, this translated into ownership of between 10 and 12 per cent of the country's total industrial capacity (White 1949: 182).

Not surprisingly given its weak organizational structure and minimal powers, the NDAC's overall achievements were limited. Still, NDAC officials did begin the challenging work of developing the procedures needed to assess industry capacities in light of military needs, monitor and clear contracts for military production, allocate scarce materials among producers, and promote the construction of new facilities.

However, as the year progressed, NDAC's deficiencies became increasingly difficult to overlook. With shortages and a dysfunctional priority system threatening the military buildup and smooth running of the economy, Roosevelt had no choice but to act. He replaced the NDAC in January 1941 with a new mobilization agency, the Office of Production Management (OPM).

#### **4. The Office of Production Management**

Military and corporate leaders hoped that Roosevelt would replace the NDAC with a more centralized and powerful mobilization agency similar to the WIB. Roosevelt again rejected this option. But as a compromise, his executive order creating the OPM gave the agency a designated leader and a policy council that included military representatives.

The OPM's policy council included Knudsen, serving as director general; Sidney Hillman (the President of the Amalgamated Clothing Workers and head of the Labor Division in the NDAC) as associate director; and the Secretaries of War and Navy. The OPM operating structure was also streamlined; divisions seen as tangential to the military buildup, such as those concerned with price stability and consumer interests, were dropped.<sup>2</sup> Unfortunately, these changes only marginally improved the mobilization effort. The three biggest reasons were that Knudsen proved to be an ineffective leader; the military continued to resist any infringement on its procurement activities; and the agency remained largely powerless, still having only advisory powers.

##### **4.1. The OPM's Structure**

The OPM had four operating divisions: the Production Division led by John D. Biggers, who had been Knudsen's assistant in the NDAC; the Purchases Division led by Nelson; the Priorities Division led by Stettinius Jr.; and the Labor Division led by Hillman. Despite Hillman's presence on the policy council, the Labor Division remained marginalized.

The Production Division now had three branches (formerly called sections). The industries previously grouped under NDAC's Industrial Materials Division made up one branch. Another covered aircraft, ordnances and tools. The third was responsible for ships, construction, and supplies. This reorganization was designed to bring the industries of greatest importance to the military under one division.

The Production Division's charge remained as before, to ensure that the supply of critical goods was adequate to meet existing and anticipated military demand. Thus, it continued NDAC's past efforts to boost investment in plant and equipment. It also had the task of finding ways to overcome the shortages that threatened defense-related production.

The Purchasing Division was largely a renamed Office for Coordination of National Defense Purchases. In March 1941, after months of bureaucratic fighting and a threat to resign, Nelson won for his division the right to review, clear, and coordinate all Army and Navy buying, contracting, and construction with a price tag of \$500,000 or more. Two months later he extended his authority to include overseeing plans for the purchase of "scarce" goods valued at \$50,000 or more (Koistinen 2004: 80).

However, this was a Pyrrhic victory. The Purchasing Division didn't have the staff to handle the ballooning number of submissions, which were deliberately inflated by the military's

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<sup>2</sup> Price control was one of the very few areas where, to overcome corporate resistance, the government encouraged popular participation. See Hart-Landsberg (2003).

procurement agencies in a successful effort to undermine the division's effectiveness. As a result, the procurement agencies were largely able to operate much as before, free from significant oversight or regulation.

The Priorities Division was organized around 5 branches: minerals and metals, chemicals, commercial aircraft, tools and equipment, and general products. Each was authorized to establish its own committees as needed to respond to shortages of goods that fell under its area of responsibility. The committees were generally composed of representatives from relevant industrial producers and users, Army and Navy procurement agencies, civilian and labor observers, and consultants from the Production and Purchases Divisions. As shortages of materials and equipment grew over 1941, the work of the Priorities Division became increasingly important to the work of the Production Division.

#### **4.2. Challenges**

It quickly became apparent that the OPM's operating structure was seriously flawed, starting at the top. Perhaps most importantly, the four-person policy council never operated as a central policy-making body. The main reason was that Knudsen refused to meet regularly or share information with OPM division heads. As a result, the divisions were largely left to operate on their own, much as they did under the NDAC. Contributing to the council's disfunction was the fact that the military representatives generally viewed the policy council as an advisory body and rarely worked to improve its operation.

The lack of overall coordination took its toll. Divisional work was often duplicated and firms received confusing and sometimes contradictory information about rules and regulations.

Still, despite these problems, the Production Division did succeed in promoting new plant construction. Construction spending for defense grew from \$6.2 billion in 1940 to \$16.7 billion in 1941 (Koistinen 2004: 130). However, it was not enough. By April, an ever-worsening shortage of key materials and equipment was responsible for more delays in fulfilling defense orders and even some shutdowns of civilian production.

The Priorities Division faced two challenges in dealing with these shortages. The first was business opposition to OPM directives. Despite the toll shortages were taking on the economy, many corporations still refused to curtail or convert their operations. The automobile industry was one of the worst offenders. Steel firms were a close second. They resisted expanding capacity despite pressure from the President and often ignored the military's priority ratings, preferring to sell to their top civilian buyers, especially the automobile industry.

The second was the military's lack of discipline and strategic focus. The military continued to flood the Purchasing Division with requests and the Priority Division with priority applications at a rate which overwhelmed the various sections, priority committees, and industry advisory committees. This created a chaotic approval and priority rating process. But the bigger problem was that the military made its requests with no awareness of, or concern for, the economy's overall supply limitations. Often times its demand for specific goods was greater than their total available supply.

### 4.3. Organizational Changes

In an effort to overcome the problems highlighted above, OPM divisions were reorganized in June and July 1941. All the existing industry branches were redivided among the Production, Purchases, and Priorities Divisions. After the reorganization, as Koistinen describes:

the Production Division directed all military output (including aircraft, ordnance, and shipbuilding), machine tools, and various materials (including steel, aluminum, and chemicals). The Purchases Division covered areas like clothing, food, drugs, textiles, and leather, while the Priorities Division had responsibility for tin, rubber, tungsten, mica, lead, zinc, and copper, all actually or potentially in short supply. The Priorities Division, however, retained jurisdiction over all priorities. (Koistinen, 2004: 87)

OPM also took steps to reduce the number and influence of the many dollar-a-year men and trade officials that occupied decision-making positions in the agency's branches and often resisted agency initiatives. In June, a Legal Division was created and a flurry of new regulations that aimed to limit the use of dollar-a-year men soon followed. However, with OPM still seeking good relations with corporate leaders, the number of dollar-a-year men working for it increased by over 40 percent between March and December 1941 (Koistinen 2004: 89).

OPM also attempted to improve its priority system with ever more complex designations. It began assigning allocation requirements along with its priority ratings, allowing it to apportion critical goods in short supply among key claimants. While the defense industries were prioritized, OPM also sought to protect essential civilian production. It first imposed allocation requirements on aluminum and machine tools. By the end of the year, it was doing the same with magnesium, ferrotungsten, nickel and nickel steel, synthetic rubber, cooper, pig iron, and steel.

OPM's last reorganization took place over August and September 1941. OPM's mission, like that of the NDAC before it, had been to facilitate the production and expansion of industries vital to the military buildup. However, as both the economy and scale of the defense mobilization grew, it became harder for OPM to ignore industries that produced for the civilian economy. As noted above, the significant consumption of materials, machines, and products by some civilian industries had begun compromising the defense effort. At the same time, the extreme demands by military procurement agencies were increasingly threatening the viability of some firms engaged in essential civilian production.

Acknowledging the need for a more wholistic mobilization process, Roosevelt gave OPM authority over the entire economy. A Civilian Supply Division was created under the direction of Leon Henderson. The division was given responsibility for all industries producing 50 percent or less for the defense program, which included most major consumer durable goods industries.

A new Materials Division, under the direction of William L. Batt, was also added. This division was assigned all the materials producing industries and commodity branches that had previously been assigned to the Production and Priorities Divisions. The Production Division kept only those industries engaging in weapons production and defense construction. While this change

left the Priorities Division without any industry branches, Roosevelt's decision to grant it the authority to place priority controls on essential civilian production made it even more important.

Leadership changes came with the reorganization. William H. Harrison replaced John D. Biggers as head of the Production Division; the latter had supported business opposition to conversion. Nelson took over the critical Priorities Division from Stettinius Jr.

The establishment of the Supply Priorities and Allocation Board (SPAB) in late August was the most significant change. Having strengthened OPM, Roosevelt now placed it under the direction of SPAB. And in response to a SPAB directive, OPM quickly moved to ease shortages by forcing the curtailment of nonessential civilian production. In one of its first actions, OPM halted all private and public civilian construction activity not considered essential to the national defense or public health and welfare. By the end of December 1941, automobiles, refrigerators, domestic laundry equipment, vacuum cleaners, and metal office furniture and equipment, all had their production curtailed or terminated.

Even more importantly, SPAB's overarching planning responsibilities positioned it to tackle the military's ongoing disregard of production limits or essential civilian needs. Roosevelt staffed the SPAB council, and placed the agency above the OPM, with this goal largely in mind. Because SPAB had no operational staff of its own, and would operate through the OPM, Roosevelt included the four OPM policy council members in the SPAB policy council. But he then added four others, all carefully chosen to ensure that SPAB would have a strong New Deal orientation: Vice-President Henry A. Wallace, who was made chair of SPAM; Harry L. Hopkins, Roosevelt's special assistant for defense aid; Leon Henderson, who was in charge of the Civilian Supply Division; and Nelson, who was chosen executive director. Roosevelt then elevated the Bureau of Research and Statistics, placing it directly under, and solely responsible to, Nelson.

SPAB's most significant accomplishment, thanks to the work of the Bureau, was its determination of both probable military wartime requirements and the economy's productive capacity. As Maury Klein reports:

In mid-September [1941], Nelson wrote to the War and Navy departments, the Maritime Commission, and the Lend-Lease administrator asking for "estimates of requirements over the next two years based on military objectives as determined by the reporting agencies." When combined with data from the missions [to London and Moscow], these figures provided a basis for what would be needed by September 30, 1943, if by then a sustained offensive were launched against the Axis. (Klein 2013: 271)

The Bureau translated the received estimates into materials, components, labor hours, and then dollars, producing in late November 1941 what was called the "Victory Program." The Bureau concluded that the Victory Program would require overall defense spending of between \$142-150 billion over the next two years. The enormity of that projected total is highlighted by the fact that this was more than twice the estimated projected defense spending for 1942 and 1943.

Although the Bureau was convinced that the economy could not support such a large spending increase, it did believe that with an all-out effort,  $\frac{3}{4}$  of the program could be met by the September 1943 target date, with the total program doable by the spring of 1944. Thus, it

presented SPAB with a two-year acceptable target of \$110-115 (Koistinen 2004: 188). The Bureau's report, finished days before the attack on Pearl Harbor, went through further revisions shortly after the US declaration of war. Despite the rough nature of the recommendation, the Bureau's work moved the country far ahead in its mobilization process. Among other things, it had forced the military to sharpen its own planning and ground its strategy in production realities. And it also helped to provide the economy-wide focus that the OPM and later the War Production Board needed to guide their work.

It took some 16 months, but the United States finally had a mobilization agency with responsibility for the entire economy, enhanced powers to direct civilian production, and an understanding of the economic capacities that needed to be developed and managed to fight and win the war. The groundwork had been well laid for the wartime mobilization that followed.

## **5. The War Production Board**

Roosevelt replaced the OPM with the War Production Board (WPB) on January 16, 1942, and selected Nelson to lead it. Nelson quickly established several new agencies. One of the most important was the Requirements Committee led by Batt. It included an independent economic and research office and was intended to continue the work done by the SPAB. Also noteworthy was Nelson's restructuring of the Office of the Executive Secretary. Knudsen had made little use of the office when he headed the OPM. Under Nelson, the office effectively worked to keep all division and section/branch heads well informed about agency deliberations and policy decisions.

### **5.1. The WPB's Structure**

The WPB's initial operating structure was similar to that of the OPM, with many of the same people remaining in leadership. The agency was structured around 6 divisions: The Production Division, Materials Division, Division of Industry Operations, Purchases Division, Civilian Supply Division, and Labor Division.

The Production Division continued to be led by William H. Harrison. Its primary charge was to support munitions production through the encouragement of new investment. Batt remained in charge of the Materials Division, which continued to oversee fourteen commodity branches. Its charge was to ensure the availability of raw and industrial materials for war production by maintaining a stockpile of key materials and promoting the construction of new or expanded production facilities.

The newly established Division of Industry Operations represented the biggest change from the OPM. Led by James S. Knowlson, previously deputy director of priorities under Nelson in OPM, it was given responsibility for organizing and overseeing the activities of all industry branches (some 42) and their industry advisory committees. Knowlson's aim was to make the industry branches the hub of WPB work, giving them primary responsibility for directing the conversion of industries to war production and maximizing the flow of materials, equipment, and workers to essential producers.

This restructuring and the exigencies of war left the remaining three divisions with only minor roles to play in the WPB. With all its divisions transferred to the Division of Industry Operations, the Division of Civilian Supply was eventually replaced by the Office of Civilian Supply.

As before, the WPB continued to depend on the work of dollar-a-year men. Between January and December 1942, their number grew from 310 to a wartime high of 805, driven in large part by the explosion in the number of industry advisory committees (Koistinen 2004: 199). The WPB's continued dependence on these nominally paid business executives remained a constant source of concern for many in Congress.

## **5.2 Challenges**

The WPB faced four major challenges in pushing the mobilization into high gear. The first was to curtail civilian production to free up resources for the military. The second was to expand the economy's production capacity. The third was to stabilize the priority/allocation system. The last was to bring military procurement into line with the productive capacity of the economy.

### *5.21. Curtailing Civilian Production*

The most immediate task faced by the War Production Board was converting the economy from peacetime to wartime production. The Division of Industry Operations initially hoped that its industrial branches and advisory committees could manage the conversion process by tying the reduction in civilian oriented production to the availability of war contracts in order to maintain regional economic stability, but this proved too difficult.

After a slow start, the conversion process finally gathered speed in March 1942 and made significant progress over the next several months. Automobiles was one of the main industries completely converted to war production. Many others, such as those producing refrigerators, farm equipment, bicycles, and typewriters, went through a partial conversion in which firms were allowed to maintain some civilian sector production. Also starting in March, orders were given to a number of industries to cease production.

### *5.22. Facilities Expansion*

Despite its contribution to the war effort, converting and curtailing production could not, on its own, achieve the required boost in war production. New plants had to be built and existing ones expanded. And 1942 was a boom year in construction. That year, facility expansion for manufacturing reached \$8.7 billion, equal to approximately one-third of all the new investments in manufacturing plant and equipment over the period June 1940-December 1944 (Koistinen 2004: 288-89).

The DPC played a pivotal role in the investment boom. At its termination at the end of June 1945, the DPC:

owned approximately 96 per cent of the capacity of the synthetic-rubber industry, 90 per cent of magnesium metal, 71 per cent of aircraft and aircraft engines, and 58 per cent of the aluminum metal industry. It also had sizeable investments in iron and steel, aviation

gasoline, ordnance, machinery and machine tool, transportation, radio, and other more miscellaneous facilities. (White 1949: 158)

The DPC supported facilities expansion in other ways. In response to the shortage of machine tools and the industry's reluctance to boost capacity to produce them, the DPC began a machine tools pool program. The DPC gave machine tool producers a 30 percent advance to begin production. If a producer found a private buyer, the advance was returned. If no buyer was found, the DPC would pay full price and put the machine tool in storage for later sale. This program proved remarkably successful in boosting machine tool production and, with machine tools readily available, speeding up weapons production (Bossie and Mason 2020: 9-10).

### *5.23. Allocation and Scheduling*

The military's unchecked use of priority designations continued to overwhelm the priority system, endangering not only war production but the stability of the economy more generally. In December 1941, the OPM had introduced the Production Requirements Plan (PRP). It was a voluntary plan which allowed firms to apply for blanket priorities for a number of critical metals to support their military and essential civilian production over the following three months. The WPB expanded the plan's coverage to 35 strategic metals and announced its intention to make the plan mandatory starting the third quarter of 1942. As of June 1942, there were approximately 7000 participating firms.

The PRP was a horizontal plan, in that all firms requiring use of designated metals had to apply for allocation rights and were treated equally regardless of their place in the supply chain. While the plan provided the WPB with the kind of detailed information needed to make efficient allocation decisions on a plant-by-plant basis, it was a complex system that generated a massive amount of data requiring enormous time to evaluate and use.

While the PRP had its advocates, the plan proved increasingly ineffective, with the WBP often unable to process the applications it received in a timely fashion. Problems also existed with the timely allocation of critical machines and components. In response, a growing number of firms had begun stockpiling essential goods, leaving some firms with a larger inventory than they needed and others without enough to efficiently run their operations. The result was a sharp decline in munitions output (Klein 2013: 454).

The WPB had no choice but to act. In September 1942, Nelson brought in two new people, Ferdinand Eberstadt and Charles E. Wilson. The former was given the task of devising a new allocation system and the latter the authority to develop the agency's capacity to manage production scheduling. Eberstadt, who had been the civilian chair of the ANMB, was named vice chair for program determination. Wilson, who at the time was president of the General Electric Company, was named vice chair of production and chair of the newly created Production Executive Committee (PEC). Both appointments were part of a larger effort by Nelson to centralize and strengthen WPB operations.

As vice chair for production scheduling, a position that had been created in July 1942, Eberstadt was given authority over all the industry and commodity branches and associated field operations and staff bureaus that had been part of the Division of Industry Operations. Eberstadt

quickly elevated all the branches into divisions and grouped them according to product—minerals, commodities, consumer goods, equipment, and construction and utilities. Following Knowlson, he sought to have each group operate as a small war production board with full responsibilities for their associated industries.

Eberstadt coupled this restructuring with the introduction of a new, vertical allocation plan, the Controlled Materials Plan (CMP). The CMP focused on fewer metals than had the PRP. Steel, aluminum, and copper were the main ones, although sixteen others also received attention. The plan required core claimants—such as the Army, Navy, and Maritime Commission—to provide detailed descriptions of their projected programs and the quantities of essential goods and controlled metals required to realize them. The latter information was to be drawn from submitted bills of materials from their respective prime contractors, which was to include information on the quantities of metals needed as well as their use, along with a monthly production schedule for the upcoming year.

The industry divisions responsible for the metals would then estimate their expected supply and decide the amount of each metal to be allocated to each claimant following WPB policy directives. The claimants would then adjust their programs accordingly and assign their metal shares to their prime contractors who were then responsible for assigning supplies to their subcontractors. Thus, in contrast to the PRP, the distribution of metals was now directly tied to end products.

The plan was rolled out slowly, with the PRP continuing to operate during the transition period. By July 1943 it was working well enough that the allocation of scarce metals was no longer considered to be a serious concern.

The allocation of the far more numerous noncontrolled goods continued to be handled through the use of priority rankings. Although easier to manage than the CMP because it required far less information, the military's continued overuse of priority designations meant a constant readjustment of production activity. However, since the CMP required that prime contractors working for key claimants share their detailed production plans, industry divisions were often able to minimize the chaos by allocating important noncontrolled goods in line with those plans.

Wilson was given authority over the industry divisions responsible for aircraft, shipbuilding, and radio and radar, and the task of boosting their output. Chosen for this task because of his reputation as a production specialist, Wilson believed that the WPB needed control over the flow of materials, parts, and components to stop the excessive inventory buildup and growing disruptions to military production.

The Production Executive Committee (PEC), which he chaired, included the heads of procurement for the Army, Army Air Forces, Navy, and the Naval Bureau of Aeronautics; the vice chair of the Maritime Commission; and Eberstadt. In November, drawing on work previously done by the Planning Commission, Wilson presented the PEC with his plan to impose efficient production scheduling on procurement agencies and key contractors.

The plan, unanimously supported by the PEC, called for a PEC subcommittee to be formed. Each procurement agency was to create a central scheduling office with individual units in every division. A representative from each central scheduling office would have a seat on the PEC subcommittee. The subcommittee would receive monthly production schedules from each procurement agency and “review the schedules for internal consistency, availability of facilities, critical materials, common components, complementary items, and manpower; and it would resolve conflicting programs and ensure that overall demand was balanced and feasible” (Koistinen 2004: 330).

The PEC’s most important scheduling challenge was with components. These included a variety of products that “ranged from the smallest bearings to heat exchangers, blowers, turbines, pumps, and thousands of parts essential to the larger end products such as ships, planes, tanks, trucks, and synthetic rubber” (Klein 2013: 478). In December 1942, the PEC created a list of thirty-four components and, working in concert with Eberstadt, arranged for essential manufacturers to receive all their required scarce materials and components. In January 1943, the PEC required all contractors to submit their projected component orders for the remainder of the year by the beginning of March. In June, the PEC created a Components Scheduling Plan for the most important munitions facing production delays, with the required components tracked much like materials were under the CMP.

By mid-1943, munitions production was once again soaring. The WPB’s success owed much to the work of the industry divisions. “The divisions knew or made themselves aware of manufacturing cycles for end items, lead times, and so forth in order to devise proper input flows. In addition, they worked with manufacturers to maximize production and to check claimants’ efforts to get specialized treatment for their contractors at the expense of other procurement agencies” (Koistinen 2004: 331).

#### *5.24. Limiting Military Procurement*

WPB struggles to manage allocation and production scheduling were intensified by the military’s unwillingness to adjust its demand for goods and services to the productive capacity of the economy. While the initiatives discussed above were necessary, it was ultimately the ability of the WPB to force the military to recognize production limits that allowed them to succeed as well as they did. The battle between the WPB and military over this issue became known as the “feasibility dispute.”

In an attempt to bring the military to heel, Nelson, in February 1942, tasked Robert R. Nathan and his Planning Committee with developing a realistic estimate of the economy’s ability to meet the military’s war-driven demands while still satisfying the essential needs of US civilians and allied nations. Nelson was alarmed by military procurement plans calling for munitions production and construction valued at \$63 billion in 1942 and \$110 billion in 1943.

Nathan hired the economist Simon Kuznets to conduct a feasibility study. In mid-March Kuznets shared his preliminary results, which included his determination that \$48 billion was the maximum value of munitions and military construction the economy could manage in 1942. Nathan reported to Nelson that action needed to be taken to reign in military demands. More specifically, that “any attempt to attain objectives which are far out of line with what is feasible

will result in the construction of new plants without materials to keep them operating; vast quantities of semi-fabricated items which cannot be completed; production without adequate storage facilities; idle existing plants due to lack of materials; and similar disrupting situations” (as quoted in Klein 2013: 380).

The military, especially Brehon B. Somervell who was in charge of the Army’s procurement agency, aggressively pushed back, arguing that the WPB had no authority to place limits on the military’s needs. Rather, its sole job was to ensure that the economy satisfied those needs.

In late August, Kuznets submitted his finished report. His estimate for the production of military goods and services in 1942 was \$40 billion; actual spending turned out to be \$44 billion. However, Kuznets’s main focus was the military’s proposed munitions and construction output for 1943. His conclusion was that their target was unattainable, overshooting what was possible by at least \$15 billion.

Nathan urged creation of a supreme war production council to include WPB officials and representatives of the Joint Chiefs of Staff and military procurement agencies to ensure that military strategy, and thus procurement activity, was pursued in line with economic realities. The Joint Chiefs of Staff ignored the proposal, and the military procurement agencies, especially Somervell, strongly opposed the idea. Somervell, in fact, disputed the results of the Kuznets report, blamed WPB incompetency for problems, and refused to modify the Army’s procurement plans.

A showdown took place in October at a three-hour WPB meeting. It was a heated meeting with WPB officials and Somervell exchanging insults and charges of incompetence. But, as Klein explains, the meeting proved to be a turning point:

Patterson (the Under Secretary of War) recognized that a resolution of the dispute was essential and that the WPB argument had some validity. On the day after the meeting he wrote Somervell, “The WPB position, that production objectives ought not to be far in front of estimated maximum production, is believed to be sound as a general rule. Otherwise our scheduling of production cannot represent reality, and it is generally agreed that without realistic scheduling we will continue to suffer from maldistribution of materials, thus cutting down the actual output of finished weapons.” At the next WPB meeting, Patterson and Somervell did not object to proposed cuts. (Klein 2013: 394)

In late November the WPB and Joint Chiefs reached agreement on a spending figure of \$80.5 billion for 1943. Although still greater than the Planning Committee’s desired limit, Nathan and Kuznets supported the agreement, believing this was still a workable outcome. The settlement of the feasibility dispute in WPB’s favor was a decisive factor in the ongoing success of the mobilization effort.

### **5.3. A Final Restructuring**

The WPB’s new organizational structure, despite its achievements, was far from stable. Nelson’s decision to treat allocation separately from production scheduling meant the organization had two powerful centers of power, each with its own structure and chief. And,

because the two tasks were often intertwined, it did not take long for Eberstadt and Wilson to clash in a struggle for organizational supremacy.

As material shortages became less critical, the WPB's focus shifted towards production scheduling and the work of the PEC. Industry divisions had become the principal operating units of the WPB, but Wilson had authority over very few. In December 1942, Wilson argued that he, not Eberstadt, should have jurisdiction over all the industry divisions that contributed to the production of military end-products, including materials. In February, Nelson sided with Wilson, and ordered the transfer of several key materials divisions.

Nelson's decision to side with Wilson was likely motivated by political as well as economic factors. The military had long pressed Roosevelt to fire Nelson and replace him with a stronger, more military-friendly leader. Nelson appeared to consider Eberstadt, who had worked well with the military as civilian head of the ANMB, as his main threat, and his demotion was no doubt intended to weaken his challenge.

But bigger political forces were in motion. Behind the scenes the military was advocating that Roosevelt select the financier Bernard M. Baruch, who had been the chair of the World War I-era War Industries Board. Roosevelt, convinced that Nelson was not capable of managing the growing tensions between Eberstadt and Wilson, privately offered Baruch the position.

However, while Baruch, recovering from a serious illness, considered whether to accept the offer, Nelson, tipped off that his firing was imminent, announced his decision to fire Eberstadt. Nelson gave as his public justification, the need to have "a production man be in full charge and that all related problems be within the jurisdiction of that production man" (as quoted in Klein 2013: 483).

Nelson's move froze Roosevelt. He did not want to appear to fire Nelson for firing Eberstadt, which would give the impression that the WPB was in the process of unraveling. Nelson kept his job, but won only the battle not the war. His authority and power were seriously diminished by the political fight.

On the same day he fired Eberstadt, Nelson promoted Wilson to executive vice chair and turned over complete operating control of the WPB to him. In March 1943, Wilson restructured operations. He kept direct control over the PEC, CMP, and several key offices. He appointed four new vice chairs to oversee the agency's remaining operations. As part of this reorganization, Wilson downgraded the standing of the Planning Commission, a move that won him favor with military leaders. In April, the members of the Planning Commission resigned in masse.

This March reorganization marked the last major change in the WPB's organizational structure. Significantly, it also marked the military's complete interpenetration of the WPB's highest-level decision-making body. The PEC, under Wilson, functioned as the executive committee of the WPB, and the military dominated its membership. Wilson believed that the WPB needed a cooperative military to successfully manage the mobilization and so he ran the PEC as a collegial body, not as one advisory to him. That gave the armed services a dominant voice in WPB

operations and its conservative orientation meshed well with Wilson's own pro-business conservatism (Koistinen 2004: 358-59).

This political orientation translated into support for labor policies designed to weaken unions and crush shopfloor activism, investment policies responsive to the needs of big corporations, procurement policies that marginalized small business, and reconversion policies that ensured the postwar hegemony of big business.<sup>3</sup> In August 1944 both Nelson and Wilson left the WPB, to be replaced by Julius A. Krug, who served as chair of the WPB until the board's dissolution in November 1945.

## 6. Lessons

The wartime experience described above holds many lessons for those seeking a Green New Deal transformation of the US economy. It demonstrates the feasibility of a rapid, system-wide conversion of the US economy. It shows the critical importance of state planning, public financing and ownership, and state direction of economic activity for achieving such a conversion. It shows the need for flexibility, both in planning structures and mobilization policies. It highlights the tensions and resistance that a conversion process generates, especially from dominant corporations. And it points to the difficult challenge of creating mobilization agencies accountable to the public rather than the corporate interest.

Of course, the World War II-era economic transformation cannot serve as a simple model for a Green New Deal transformation. There are too many differences in the times and aims of the two transformations. That said, there are some reasons to believe that a Green New Deal transformation will be easier to accomplish than was the World War II-era transformation:

- The World War II transformation had to be quickly achieved to prepare for, and then engage in, an all-out war. By contrast, although climate events are growing in number and severity, our transformation does not have to be as rapid, making it easier to manage.
- One of the biggest challenges facing mobilization authorities during World War II was the military's separate and superior status. No self-contained institution exists today equivalent in size and importance to that of the military during World War II. Thus, the agencies we create should have far greater freedom and authority to organize and direct the transformation in response to majority interests.
- The military's inability to define its strategy and translate its munition needs into required goods and services also greatly complicated the mobilization effort. As opposed to the uncertainties involved in planning and then conducting a war, we have a relatively good understanding of the causes of climate change and the range of actions, including their

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<sup>3</sup> Taking advantage of the military's overriding concern with achieving maximum production, business leaders were able to defeat union attempts to legislate against the awarding of military contracts to firms in violation of labor law. They also succeeded in ignoring overtime pay requirements when lengthening the workweek and in imposing new workplace rules that strengthened management prerogatives. See Lichtenstein (1987) and Hart-Landsberg (2020).

material requirements, needed to restore ecological balance. That knowledge will make planning far easier.

At the same time, there are also reasons to believe that a Green New Deal transformation will be harder to achieve than was the World War II-era transformation:

- The reality of the war ensured popular support for state efforts to convert the economy. Unfortunately, widespread support for action against climate change does not yet exist. Even now, many people, including elected officials, deny the reality of climate change. This means we will need to engage in sustained and massive popular education about the climate crisis to create political conditions supportive of decisive action to transform our economy.
- Thanks in large part to the popularity of the New Deal, there was a general willingness among the population to believe in the capacity of the government to manage economic activity. That fact made it easier for Roosevelt to advance a state directed war-time mobilization. Also, again largely thanks to the New Deal experience, Roosevelt was able to call upon a number of professional economists and planners as well as friendly business leaders, all with government experience, to fill important roles in the new mobilization agencies. Unfortunately, we face widespread popular doubts about the ability of government to solve problems. Moreover, there are relatively few progressive economists or planners with prior government experience designing or managing large-scale public programs.
- The war-time mobilization was designed to support the needs of the military. The military's needs, in turn, were expressed through the purchasing decisions of their procurement agencies. These decisions were largely treated by mobilization agencies as marching orders. We do not have a military equivalent to drive a Green New Deal transformation. By its nature, a Green New Deal transformation will involve significant changes to many sectors of the economy, and our interest in a grassroots democratic restructuring process means that there needs to be popular involvement in shaping each sector's transformation, not to mention the connections between sectors. Thus, we face the difficult challenge of creating the organizational relationships and structures required to bring together leading community representatives, and produce, through conversation and negotiation, a broad roadmap of the process of transformation we collectively seek.
- Big business was far weaker then, than now. The depression and New Deal policies encouraged popular distrust of its motives. Moreover, the international economic system was in tatters, with most countries employing a variety of regulatory measures to control trade and capital mobility that were further tightened during the war. That environment made it far harder for corporations to resist state initiatives. Unfortunately, the world is quite different now. Big corporations are celebrated as "job creators" and it is the government that is distrusted. And thanks to the current freedom enjoyed by corporations to shift production and finance globally, they have a variety of ways to blunt state efforts to monitor or direct their activities.

- Because World War II was a world war, almost all governments were forced to pursue, to some degree, the planning and regulation of their respective national economies. However, we cannot assume that the pursuit of a Green New Deal transformation in the United States will be matched by similar efforts in other major capitalist countries. Thus, moves in the United States to promote new Green New Deal-responsive investments, force firms to convert or terminate their fossil fuel-dependent production, allocate materials, or manage production scheduling, can be expected to produce negative responses from other governments representing the interests of their respective business leaders.

In sum, a Green New Deal transformation is certainly needed and doable. But to achieve it will be far from easy. It will require developing a broad-based effort to educate people about our ecological crisis and the role of capitalism in driving it, building a political movement for system-wide change anchored by a new ecological understanding and vision, and creating the state and community-based representative institutions needed to initiate and direct the desired transformation.

It is that last challenge that makes a careful consideration of the World War II-era conversion of the US economy especially valuable. By studying how that rapid economy-wide transformation was achieved, we are able to gain important insights into, and the ability to prepare for, some of the many challenges and choices that await us on the path to the new economy we so badly need.

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