

SCHOOL FOOD SERVICE SOFTWARE SYSTEM  
(SFSSS)

Specifications and Functional Requirements Document  
For Nutrient Standard Menu Planning Software Programs

USDA, Food and Nutrition Service  
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This is the 2009 revision of the document *Specifications and Functional Requirements for a School Food Service Software System* (referred to hereafter as the specifications document) that was first created in January 1994. The title of the document was changed with this revision to more accurately reflect the contents of the document. The organization and format of this document were changed to follow the organization of the evaluation and testing procedures used in the software evaluation process.

Schools using Nutrient Standard Menu Planning (NSMP) must use a software program developed by a private software company and approved by the United States Department of Agriculture (USDA) for use in implementing NSMP and in conducting nutrient analyses that meet School Meals Initiative for Healthy Children (SMI) requirements. This specifications document includes the specifications and requirements for software companies to use when developing software programs for schools to use with NSMP. Developers who wish to have their software program evaluated and approved by USDA must follow the specifications and requirements included in this specifications document. These specifications and requirements are used by USDA as the basis for the evaluation and approval process for software programs developed for NSMP.

Approval by USDA does not mean that the program is endorsed by USDA or the Food and Nutrition Service (FNS).

FNS and the software evaluation coordinator welcome your comments, suggestions and feedback. Please forward information to:

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## ***Introduction and Overview***

The purpose of this specifications document is to provide the specifications and requirements for software programs developed for use in implementing Nutrient Standard Menu Planning (NSMP) and in conducting nutrient analyses of menus to meet other School Meals Initiative for Healthy Children (SMI) requirements. The term “approved software program” will be used in this document to refer to the software programs approved by the United States Department of Agriculture (USDA) for implementing NSMP and in conducting nutrient analyses of menus that meet SMI requirements.

### **Nutrient Standard Menu Planning**

NSMP is one of the menu planning options available to schools to use to comply with the requirements for SMI outlined in the regulations for Child Nutrition Programs (CNP), specifically the National School Lunch Program (NSLP) and School Breakfast Program (SBP). These regulations require compliance with current nutrient standards. School meals must meet specific nutrient standards for key nutrients based on one-third of the Recommended Dietary Allowance (RDA) for lunch and one-fourth of the RDA for breakfast. NSMP also requires that school meals comply with the recommendations from the 1995 *Dietary Guidelines for Americans* for fat and saturated fat. The regulations for school meals programs, specifically the National School Lunch Program (NSLP) and School Breakfast Program (SBP), are published in the *Code of Federal Regulations (CFR)* (<http://www.gpoaccess.gov/CFR/>). CFR Title 7 Part 210.10 includes the menu planning regulations for NSLP, while Part 220.8 lists the regulations for SBP. [Search as “7CFR210 and (menu planning)” or “7CFR220 and (menu planning)”]

Under NSMP, the menu is evaluated through the nutrient analysis of all foods offered over a school week to ensure that meals meet the specific standards for key nutrients and recommended levels of fat and saturated fat. Approved software programs are used to support NSMP and other SMI requirements by calculating an accurate nutrient analysis of the menus and recipes served in the NSLP and SBP. This nutrient analysis of menus averaged over a week is then compared to the required nutrient standards for the age/grade group served.

### **Approved Software Programs**

The purpose of approving software programs for NSMP and SMI is to provide schools with nutrient analysis and menu planning software programs that accurately analyze menus and compare the nutrient analyses to required nutrient standards. By approving software programs, USDA gives schools a choice of commercially available software programs which include the same basic functionality and can be used to streamline the nutrient analysis requirements for NSMP. Additionally, approved software is used by State agencies to audit compliance with the nutrient standards and 1995 *Dietary Guidelines for Americans*.

Only software programs that meet the specifications and requirements and are approved by USDA may be used by CNP participants to implement NSMP or conducting analyses to meet SMI requirements. While the approved software programs may be used for other SMI

requirements, the required functionality is specific to NSMP requirements. The required NSMP functionality does not include Food Based Menu Planning (FBMP). (See Optional Functions, Food Based Menu Planning Functions for information about the optional FBMP functionality).

In this document, from here on, “NSMP” will be used to refer to the NSMP and SMI requirements.

## **Purpose of the Specifications Document**

The purpose of this specifications document is to assist the software developer with the creation of a menu planning software program that meets the requirements for approved software programs. The specifications document also forms the basis for the evaluation and approval of the software programs.

The overall objective is to provide details about what the software program must do, rather than how it will be done.

## **Instructions for Reading this Specifications Document**

The intent is to move the developer through the required functionality of the approved software programs in a logical manner from food items and ingredients through menu development and nutrient analysis. This document describes the required functionality that a software program must have to meet the requirements for NSMP software and become approved by USDA for NSMP.

This updated specifications document is organized to follow the format of the preliminary checklist evaluation form that is used by both software developers and the software evaluators to test new software programs against the requirements for NSMP. The general requirements are shown first, followed by specific details about each requirement. General guidelines with examples may be included, as well as references to other documentation or support materials. Recommendations may also be included in some sections. Recommendations are optional (not required for approval) and are generally offered to improve software usability. Frequently asked questions are included for most subjects, where applicable.

The approved software program may be part of a larger food service system that includes inventory, purchasing, Free and Reduced, or other functionality. It is recommended that the menu planning software program be available to use and purchase as a stand-alone software program that can be used without the other components.

## **Software Evaluation and Approval Process**

Software developers, who wish to have their software program approved by USDA, must submit their software program to USDA for evaluation and review. The software evaluation and approval process is outlined in the Evaluation and Approval Process section of this document.

## ***Child Nutrition Database (CN-D)***

*The software program must include the current release of the Child Nutrition Database (CN-D). The CN-D must be the primary database used by the approved software program. The CN-D is a product of the United States Department of Agriculture's (USDA) Food and Nutrition Service (FNS) managed through an independent contractor.*

The CN-D is usually updated annually during the first quarter of the year. New programs are required to include the current version, referred to by "release" number. Approved programs must update and submit their approved software program within 90 days of when the new release is made available.

The CN-D is available to download from the Healthy Meals Resource System (HMRS) Web site (<http://healthymeals.nal.usda.gov/cndatabase.html>).

The document *Child Nutrition Database Version CNx: System Components and File Formats* (referred to in this document as the "file formats document") is also available at the HMRS Web site (<http://healthymeals.nal.usda.gov/cndatabase.html>). This document, updated with each release of the CN-D, includes information about the files that comprise the CN-D. It also includes information about the sources of the data included in the CN-D.

### **Food Items in the Child Nutrition Database (CN-D)**

The primary file for food items in the CN-D is the Food Description (FDES) file. The nutrient data is provided in the Nutrient Values (NUTVAL) file using codes explained in the Nutrient Description (NUTDES) file. Source codes from the NUTVAL file are included in the following descriptions for your clarification, but they do not need to be included in the software program. The CN-D includes food items from the following four sources.

*Food Items from the USDA National Nutrient Database for Standard Reference (SR):*

*The software program must include the food items in the CN- D from the SR. These food items have the source code of 1 for USDA National Nutrient Database for Standard Reference.*

*Food Items from the USDA Recipes for Schools (Standardized Recipe Foods)*

*The software program must include the food items in the CN-D that correspond to the **USDA Recipes for Schools**. These food items have the source code 2 for standardized recipe calculation. These food items correspond to the set of production recipes produced by USDA for schools participating in the Child Nutrition Programs, **USDA Recipes for Schools** ([http://www.fns.usda.gov/tn/Resources/usda\\_recipes.html](http://www.fns.usda.gov/tn/Resources/usda_recipes.html)).*

*As of March 20, 2011, the software program must show the recipe code from the Commodity or Recipe Code field of the FDES file. The user must be able to search by the recipe code and the recipe code must also be displayed on search results.*

#### *Food Items from Food Manufacturers*

*The software program must include the data for the food items in the CN-D from food manufacturers. These foods have the source code of 3 for food industry.*

#### *Foods from the USDA Food Distribution Program*

*The software program must include the data for the USDA Foods (formerly commodity foods) available to schools through the USDA Food Distribution Program included in the CN-D. These food items have the source code of 4 for commodity.*

*As of March 20, 2011, the software program must show the commodity code from the Commodity or Recipe Code field of the FDES file. The user must be able to search by the commodity code and the commodity code must also be displayed on search results.*

## **Changes to Data in the CN-D**

### *Discontinued and Removed Data*

*The software program must include all data in the CN-D that is marked with the status of discontinued (d). Data in each file of the CN-D includes a status field. Data is marked with the status “a” for active or “d” for discontinued. The status field of the CN-D is intended to notify developers and users of approved software that discontinued data, such as food items used in recipes and menus, will no longer be included in the next release of the CN-D. This notification of future removal is intended to provide users with ample time to replace their data with updated or new data. Software developers must ensure that software programs do not interfere with this alert mechanism. **The data marked with “d” should not be removed from the program’s database until it is physically removed from the CN-D with the next release.***

*Data must be removed from the software program when it is removed from the CN-D. The records marked as discontinued (d) in a CN-D release will be removed from the next CN-D release. For example, data marked “d” in CN12 was removed in CN13. All discontinued data must be removed from the software program when it is removed from the CN-D.*

*The software program must mark or highlight FDES file items that are marked “d”, so the user knows which foods will be removed with the next release of the CN-D.*

Additional recommendations:

Recommend showing the “d” status for Weights (WGHT) file data that is marked as discontinued.

Recommend providing a system of alerting the user about WGHT file units of measure and FDES foods marked “d” that are currently being used in recipes or on menus, such as a warning message or report showing foods currently used that are now marked as “d”. This will allow the user ample time to replace foods marked “d” on recipes and menus before these items are removed from the CN-D.

*New Foods:*

*All new foods added to the FDES file must be added to the software program. The file formats document for the current CN-D release includes the start date for the Data Added field for new data in the current release.*

*Modified Foods:*

*All data for foods that have been modified must be changed in the software program to match the changes in the CN-D. Data that has been modified has a date in the Last Modified field. The file formats document for the current CN-D release includes the start date for modified data in the current release.*

## **Nutrient Data in the CN-D**

*Nutrient data from the NUTVAL file must be linked to the corresponding food item from the FDES file.*

*Zeros for nutrient data must only be used for true zero values. Nutrient data represented by a zero means that the food was tested for that nutrient, but there was no amount of that nutrient found in the food. For example, a value of zero for calories, or food energy, means that this food contains no calories. Values of zero are not to be interpreted as missing values or blanks; they must remain zeros.*

*A code or symbol must be used for missing nutrient values. Blank nutrient values in the CN-D are not to be interpreted as zeros. Blank nutrient values should be interpreted and marked as missing values; for example, an asterisk with a footnote would indicate that the optional nutrient value has not been provided. Additionally, any nutrient total containing a missing value must also be marked as missing nutrient data. **Use of a zero to represent a missing value is incorrect.** The optional nutrients, water, moisture, and *trans* fat (See Required Nutrients section of this document.) are the only acceptable nutrients to be assigned missing values in the CN-D.*

*Modified data from the NUTVAL file must be updated in the approved software program. Changes to nutrient data in the NUTVAL file must be updated in the approved software program.*

## **Supporting files in the CN-D**

### *Food Buying Guide (BUYGD & BYGDLNK) Files:*

The Food Buying Guide (BUYGD) file contains data on the quantity of ready-to-serve, ready-to-cook, or cooked food obtained from a purchased unit of food. The BUYGD file is based upon the revised, *Food Buying Guide for Child Nutrition Programs* (Program aid 1331; November 2001) (<http://www.fns.usda.gov/tn/Resources/foodbuyingguide.html>). In this document, this publication is referred to as the Food Buying Guide.

*The program must include the Food Buying Guide files (BUYGD and BYGDLNK) as a reference for the user. The Food Buying Guide information from the BUYGD file must be linked to the corresponding CN-D food item(s) using the BYGDLNK file. The data specific to a CN-D food item must be shown with that food item. The developer may also have a link to the entire file of Food Buying Guide data.*

*The program must show the Food Buying Guide information for all CN-D foods that have a BYGDLNK at the food item level. Some CN-D food items are linked to one BUYGD code while others are linked to multiple BUYGD codes. Some BUYGD codes are linked to more than one CN-D food item. Some CN-D food items are not linked to a BUYGD code.*

*The Food Buying Guide information must be complete, correct, and easy-to-read.*

Additional recommendations:

Show the Food Buying Guide data as a reference when the user is selecting ingredients to add to recipes.

### *Gram Weights and Measure Descriptions File (WEIGHTS or WGHT file) (WGHT):*

*The program must provide all units of measure from the WEIGHTS file for the corresponding FDES food item whenever the user will select ingredients to add to a recipe or menu. These units of measure specific to the FDES food item must be shown to the user at the recipe level when selecting ingredients for a recipe. These units of measure must also be shown when adding food items to a menu, if the program allows the user to add food items directly to a menu. If the program requires the user to set up menu items in addition to recipes, these units of measure must be available for the FDES food item when the user creates the menu item.*

*The unit of measure from the WEIGHTS file must be shown for fractional and multiple units of measure.* The developer may create a whole unit of measure, such as “1 cup” from “1/3 cup”. However, the original WEIGHTS file unit of measure must also be shown. It is preferred that the original unit of measure is shown at the recipe and menu levels, where applicable. However, it is acceptable to show the whole unit of measure in the selection menu (such as a pull-down menu), as long as the original WEIGHTS file unit of measure can easily be viewed from the recipe or menu function. The user must not be required to leave the recipe or menu function and return to the food item function to view the WEIGHTS file data. The developer may provide a link to this information from the recipe or menu entry windows.

*Units of measure from the WEIGHTS file must be tagged with the source of USDA.* The user must be able to determine which units of measure were provided by USDA in the WEIGHTS file versus measures added by the developer. The developer must have a way of listing or marking the WEIGHTS file units of measure so it is clear to the user that these units of measure were provided by USDA. Conversions to whole units of measure or other required measure conversions (see Measure Conversions section of this document) must be tagged as developer-added. The developer may use a code, symbol, abbreviation, or grouping system to tag the units of measure. The developer may also mark other sources of measurement data, such as developer-added or user-added, but it is not required.

Additional recommendations:

Show the weight of the unit of measure from the CN-D as a reference to the user. This is especially useful for each-type units of measure, such as piece or serving, that do not include a weight or volume measurement and package sizes that do not include a weight

Show the units of measure from the WEIGHTS file at the food item or ingredient level.

Show the “d” status for WEIGHTS file data that is marked as discontinued.

Provide a system of alerting the user about foods and WEIGHTS file units of measure marked “d” that are currently being used in recipes or on menus, such as a warning message or report showing foods currently used that are now marked as “d”

## **Additional CN-D Requirements**

*CN-D Categories or Other Grouping System*

*The program must have a grouping system for food items and recipes. This grouping system may be the grouping system provided by USDA in the CN-D, a*

modification of the USDA grouping system, or a unique grouping system. The categories used in the CN-D are found in the Food Category Name File (CTGNME) of the CN-D. The CN-D categories may also be used for user- or developer-added food items.

*Full description and Child Nutrition Database Number (CND#)*

*The full description (Descriptor field) from the CN-D must be shown to the user at the food item, recipe, and menu planning (for single-ingredient menu items) levels of the program. The developer may allow the user to enter a shorter menu name for CN-D foods, as long as the full description (Descriptor field) is still available to the user. For programs that allow the user to link to or download from the CN-D, the full description of a CN-D food item must be shown for the linked or downloaded food item.*

*The CND# (or CN Code) must also be shown to the user at the food item, recipe, and menu planning (for single-ingredient menu items) levels of the program. The developer may use the CND# as the identification number for CN-D food items. If the developer uses a unique item number, the CND# must also be shown in a separate field. For programs that allow the user to link to or download from the CN-D, the CND# must be shown for the linked or downloaded food items.*

Additional recommendations:

Provide the full description (Descriptor field) instead of the abbreviated description (Abbreviated Descriptor) wherever the user views information about the food item, including search results. The abbreviated descriptor often contains cryptic abbreviations that are unique to the source of the data.

Provide a method for the user to enter a short description or menu name for the food items to be displayed on menus. This can be done for CN-D food items or for ingredients linked to CN-D food items.

*Source of Nutrient Data*

*The source of the nutrient data must be shown to the user. It must be clear to the user which data is from the CN-D and which has been added by the user or developer. The developer may use "USDA", "CN", "CN-D", or similar for all CN-D data. USDA prefers the use of a single source tag, such as "USDA" to mark the CN-D data. However, use of the CN-D Source Code field tags is acceptable. As an alternative, the developer may have a unique numbering system or a separate section for the CN-D items. However, it must be clear to the user that the source of the data is from the CN-D.*

*Source tags used for CN-D food items must be different from source tags used for user- or developer-added food items.*

*Units of measure from the WEIGHTS file must be tagged as USDA.* The user must be able to determine which units of measure were provided by USDA in the WEIGHTS file of the CN-D. The developer must have a way of listing or marking the WEIGHTS file units of measure so it is clear to the user that these units of measure were provided by USDA. Conversions to whole units of measure or other required measure conversions (see Measure Conversions section of this document) must be tagged as developer-added. The developer may use a code, symbol, abbreviation, or grouping system to tag the units of measure. The developer may also mark other sources of measurement data, such as developer-added or user-added, but it is not required.

#### Additional Recommendations

Include a source field or tag for CN-D items even if these items are grouped in a separate section for CN-D food items or have a unique numbering system for CN-D food items.

#### *Integrity of the CN-D Data*

*The user or developer may not delete food items from the CN-D.* CN-D items may be moved to a working database to create a smaller subset of items. CN-D food items may be copied, downloaded, or linked to this working database. The identity of the CN-D food items must be maintained. CN-D food items may be hidden to create a smaller subset of food items, as long as the user can view and re-activate any or all CN-D food items, if desired.

*The data from the CN-D must be locked.* The user may not edit data from the CN-D. The developer may allow the user to enter a shorter menu name for CN-D items, as long as the full description (Descriptor field) is still available to the user.

*Appropriate length fields must be available, especially for description, CND#, category, manufacturer, product code, and source of nutrient data.* Refer to the file formats document at: <http://healthymeals.nal.usda.gov/cndatabase.html> for field lengths.

#### *Nutrient Composition Report*

*The program must generate a Nutrient Composition Report that shows the nutrient values of the food items from the CN-D.* The user must be able to request food items by description, CND# (or ID#), or category.

#### Additional Recommendations:

Give the user the option to create the Nutrient Composition Report for a range of food items from the CN-D. It is highly recommended that the user be able to create the reports for more than one CN-D food item at a time.

Allow the user to select a subset of CN-D food items by searching the database (either CN-D or local database), by CND#, description, keyword, or category, and then create this report for the smaller subset of CN-D food items.

Provide the user with the option to create the Nutrient Composition Report for all food items from the CN-D.

## Frequently Asked Questions Related to the CN-D

- 1) *May we keep data that has been removed from the CN-D in our program for historical purposes?*

Yes. The software program may keep food items and other data that has been removed from the CN-D for historical purposes, if it is maintained in a separate section and clearly marked as such. The software program must not allow the user to place or maintain any food items removed from the CN Database in active menus or recipes.

- 2) *We already have a system of categorizing food items in our software program. Do we need to change to the USDA categories?*

No. The program is required to have a system of categorizing the food items in the program's database. It does not have to be the system of categories used by USDA in the CN-D. It may be user-specified categories, developer-specified categories, or modified USDA categories.

- 3) *May we allow the user to create a smaller working database or link to desired CN-D food items rather than having this large database available to the user?*

Yes. Software developers or users can create a customized user-database including a reduced number of food items selected from the CN-D to meet the user's inventory and specific menu planning needs. This can be accomplished by hiding unused CN-D food items so that users may search through a smaller database during menu planning. The entire CN-D must still be available to the user, as needed, to select new food items to add to the working database. The user must know that items have been hidden and have the knowledge and ability to add the items back into their working database. It is also recommended that a list of the hidden items be readily available to the user. The developer may also allow the user to link to specific CN-D food items from an inventory or ingredient database. The user must still be able to view and access the entire CN-D.

- 4) *May we allow the user to add local units of measure for foods from the CN-D?*

Yes. Software programs may allow the user to add additional, local units of measure to CN-D food items, as long as these user-added units of measure are tagged as such by the software program. It must be clear to the user which units of measure were provided by USDA in the CN-D and which were added by the user.

5) *Do we need to show all fields provided in the CN-D?*

No. Some fields are provided for data integrity only. The data added and date modified fields do not need to be shown to the user. The status field does not have to be shown, per se, but FDES food items must be marked for the user when the status is “d” for discontinued. The value type code in the NUTVAL file should not be shown to the user. The software developer may choose to omit the Abbreviated Descriptor field from the FDES file.

6) *May we include data from the SR that is not included in the CN-D?*

If data from the SR is included in the approved software program, data from the CN-D must take precedence. Duplicate data from the SR may not be provided as both a SR food item and a CN-D food item in the approved software program. The duplicate SR food item must be removed from the program’s database. The SR data that is included as part of the CN-D must not be updated until it is updated with the next CN-D release. Food items from the SR must be tagged differently than food items from the CN-D.

7) *What do we need to know before we update to the new release of the CN-D?*

- a) FNS adds new SR food items, typically used by schools, to each release of the CN-D.
- b) All Source\_Code 1 food items in the CN-D are from the SR, any changes to those food items in the SR will also be made to the CN-D.
- c) FNS periodically adds new data to the CN-D. For example: Food Buying Guide data, updated USDA-recipe analysis data, and new USDA Food Distribution Program foods (USDA Foods; formerly commodity foods) nutrient data.
- d) The file formats document (<http://healthymeals.nal.usda.gov/cndatabase.html>) is updated with each release of the CN-D and provides helpful information about the CN-D files and fields, as well as changes to the format of the CN-D.
- e) The structure of the CN-D is intended to mirror the SR. Any changes made to the structure of the SR will also be made to the structure of the CN-D
- f) The database contractor is responsible for maintaining and expanding the CN-D. The database contractor adds the nutrient profiles submitted by the food industry (Source\_Code 3). Food manufacturers may send the nutrient data directly to the contractor on the FNS Web site (<http://www.cndatabase.fns.usda.gov/>).
- g) Software developers should notify the Software Evaluation Coordinator immediately if errors are discovered in the new release.

## ***Create, Update, and Save Food Items to the Local Database***

The local database refers to the main working database of the software program. This database may be based upon and include the entire CN Database (CN-D) or it may be a separate database to which CN-D food items are linked or downloaded. Local food items are those food items added to the local database by the user or developer.

### **Enter Food Items into the Local Database**

*The user must be able to enter additional food items to the software program's database. The user must be able to enter nutrient data for food items that are not included in the CN-D. The user may have nutrient data from the manufacturer, another database, a food label, or another source.*

*The user must be able to enter the gram weight of the serving size upon which the nutrient data is based. The user must be able to enter the gram weight, so that the program can make appropriate conversions to nutrients per 100 grams and other units of measure. For example, the nutrient data may be for "1/2 cup = 120 grams", so the user must be able to enter "120 g" for the gram weight upon which the nutrient values are based.*

*The software program must be able to convert the user-entered nutrient data to "nutrients per 100 grams" and nutrients per other units of measure, including the required units of measure listed in the Measure Conversions section of this document. The software program must be able to convert the nutrient data to "nutrients per 100 grams" to be consistent with the format of the CN-D and to have a common unit for comparison. See below for instructions for converting data to "nutrients per 100 grams".*

### **Conversion of Nutrient Data to Nutrients per 100 grams**

When the user enters the nutrient values listed on the food label (Nutrition Facts panel) or nutrition analysis handout; the software program should use the following equation to convert the nutrient values "per serving" to nutrient values "per 100 grams":

$$a/b = x/100$$

where a = nutrient amount per serving (such as 1/2 cup provides 1.2 mg iron, so a=1.2)

b = weight of the serving size (such as 1/2 cup= 80 grams, so b =80)

x = nutrient amount per 100 grams

## Example of Calculation of Nutrients “per 100 grams”

The following is an example of nutrients listed on a food label or nutrition information sheet. The label used in the example to demonstrate the methodology is for illustrative purposes only.

### Nutrition Facts

Serving Size: 1 cup (228g)

Servings per Container: 2

### Amount per Serving:

Water	40 g
Calories	260 calories
Protein	5 g
Total Fat	13 g
Saturated Fat	5 g
<i>Trans</i> Fat	1 g
Carbohydrate	31 g
Dietary Fiber	3 g
Ash	10 g
Cholesterol	30 mg
Sodium	660 mg
Calcium	150 mg
Iron	.72 mg
Vitamin C	.52 mg
Vitamin A	200 IU

WATER	$40\text{g}/228\text{g} = x/100\text{g}$	= 18g Water/100g
CALORIES	$260\text{g}/228\text{g} = x/100\text{g}$	= 114 Calories/100g
PROTEIN	$5\text{g}/228\text{g} = x/100\text{g}$	= 2.19g Protein/100g
TOTAL FAT	$13\text{g}/228\text{g} = x/100\text{g}$	= 5.7g Total Fat/100g
SATURATED FAT	$5\text{g}/228\text{g} = x/100\text{g}$	= 2.19g Saturated Fat/100g
<i>TRANS</i> FAT	$1\text{ g}/228\text{g} = x/100\text{g}$	= .44g Trans fat/100g
CARBOHYDRATE	$31\text{g}/228\text{g} = x/100\text{g}$	= 13.6 g Carbohydrate/100g
FIBER	$3\text{g}/228\text{g} = x/100\text{g}$	= 1.31g Fiber/100g

ASH	$10\text{g}/228\text{g} = x/100\text{g}$	= 4.39g Ash/100g
CHOLESTEROL	$30\text{ mg}/228\text{ g} = x/100\text{ g}$	= 13.16 mg Cholesterol/100 g
SODIUM	$660\text{ mg}/228\text{ g} = x/100\text{ g}$	= 289 mg Sodium/100 g
CALCIUM	$50\text{ mg}/228\text{ g} = X/100\text{ g}$	= 65.79 mg Calcium/100 g
IRON	$72\text{ mg}/228\text{ g} = x/100\text{ g}$	= 31.58 mg Iron/100 g
VITAMIN C	$52\text{ mg}/228\text{ g} = x/100\text{ g}$	= 22.81 mg Vitamin C/100 g
VITAMIN A	$200\text{ IU}/228\text{ g} = x/100\text{ g}$	= 87.72 IU Vitamin A/100 g

*The software program must convert nutrient data internally for use in nutrient analysis reports and displays for food items, recipes, and menus. The developer may determine the units upon which the nutrient data is displayed, except where instructed otherwise in this specifications document. Refer to the Measure Conversions section of this document for more information and examples of conversions to other units of measure.*

*The software program must have at least five digits and three decimal places (thousandths) available for entry of nutrient values.*

*The software program must allow the user to enter vitamin A data in both Retinol Equivalent (RE) and International Units (IU).*

*The software program must convert between IU and RE, if one of these values is not entered. The program must use a 1 RE: 5 IU conversion ratio. Actual values for IU and RE are preferred and must override any automatic conversions between RE and IU.*

*The software program must include the following warning messages to help prevent data entry errors:*

*The entered total weight differs from the calculated (additive) weight of the components (moisture, ash, protein, fat, and carbohydrate) by more than 10%. The user must be allowed to save this data, as there may be valid data that differs by more than 10%.*

*The entered calorie value differs from the calculated (additive) calories from fat (g x 9), plus protein (g x 4), and carbohydrate (g x 4) by more than 10%. The user must be allowed to save this data, as there may be valid data that differs by more than 10%.*

*The entered weight value for saturated fat is greater than the entered weight for total fat. The developer may choose not to allow the user to save this data.*

*The source of the data must be shown to the user. It must be clear to the user which data is from the CN-D and which has been added by the user or developer. One source tag can be used for all non-CN-D data, such as “local” or “user” or the developer may have multiple source tags for non-CN-D data. Source tags from the CN-D may not be used for locally-added data.*

*The identification numbers (ID#s) used for the local food items must be outside of the range of Child Nutrition Database numbers (CND#s) or CN Code numbers used by the CN-D. Numbers within the range of the CN-D may not be used, even if not currently assigned to a CN-D food item because they may be assigned in the future. The United States Department of Agriculture (USDA) has recommended that the numbers 900,000 to 999,999 be used for locally-added items. Programs that use a separate “working” or “inventory” database (to which CN-D food items are linked or downloaded) may not need to follow this numbering system.*

*The nutrient data of locally-added food items must not be removed, lost, or deleted when the program’s database is updated with the new release of the CN-D.*

*Missing nutrient data must be marked. Data added by the user or developer may have missing nutrient values for some nutrients. This is acceptable as long as the user can easily determine which values are missing and which nutrient analysis totals include missing data.*

*The same system for marking missing nutrient values, such as blanks, a symbol, or a code must be used throughout the program.*

*Nutrient analysis totals that include missing nutrient data must also be marked. The developer may have a system for marking the nutrient analysis totals that is different from the system for marking missing nutrient values for one food item.*

*Zeros may not be used for missing data. Zeros must only be used to represent true zero values.*

*Missing data from the CN-D must also be marked using the same system. The CN-D does not include any missing values for the required nutrients (vitamin A, vitamin C, iron, calcium, fat, cholesterol, saturated fat, sodium, fiber, calories, protein, and carbohydrate). However, there may be missing values (or blanks) for the optional nutrients (ash, moisture, *trans* fat). Nutrient values and totals that include missing nutrient values from CN-D food items must also be marked.*

*The system, such as blanks, codes, or symbols, used to define missing data must be defined for the user in a key or legend on all reports or displays where this system is used.*

*The developer may add additional ingredients and nutrient data to the software program’s database. In addition to the requirements above, the following rules must be followed:*

Software developers may include additional data from the *USDA National Nutrient Database for Standard Reference (SR)* that has not been included in the CN-D, if the following requirements are met:

*The source of the SR data must be marked differently than the CN-D data. The user must be able to determine which data is from the CN-D.*

*The CN-D takes precedence over the SR data. Data from the SR that is included in the CN-D must be maintained and updated as part of the CN-D, rather than at the time of SR updates.*

*Duplicate data from SR must be removed keeping the data from the CN-D in the software program. If the software developer adds SR data to the software that duplicates CN-D data, the SR data must be removed and the CN-D data retained. Food items from SR that are in the CN-D may only be included once as part of the CN-D.*

*Additional nutrients from the manufacturer, SR, or other data source may be included, but it is recommended that only the nutrients provided in the CN-D be included. If additional nutrients are included, they must be shown in a separate section or separate report. Presenting the CN-D nutrients first followed by the additional nutrients is also an acceptable option.*

## **Enter Nutrient Data from Food Labels into the Local Database**

*The software program must provide the user with the capability to convert the nutrient analysis information listed on the food label (Nutrition Facts panel) of a food item as a percent of Daily Value (%DV) to the appropriate nutrient values per 100 grams of a food item for vitamins A (IU only), vitamin C, calcium, and iron.*

This method should be used when the food manufacturer only provides the %DV, such as on a food label. The user will enter the percentage as listed on the food label (Nutrition Facts panel) or fact sheet. The software program will calculate the nutrient amount using the following equations:

### *CALCIUM –*

The Daily Value (DV) for calcium used on the food label is 1000 mg. The constant for the first part of the equation is 1000 mg.

$$1000 \text{ mg} \times y\% = x \text{ mg calcium}$$

Where  $y\% = \%DV$

$x =$  value for amount of calcium

*IRON –*

The DV for iron used on the food label is 18 mg. The constant for the first part of the equation is 18 mg.

$$18 \text{ mg} \times y\% = x \text{ mg iron}$$

Where  $y\% = \%DV$   
 $x =$  value for amount of iron

*VITAMIN C –*

The DV for vitamin C used on the food label is 60 mg. The constant for the first part of the equation is 60 mg.

$$60 \text{ mg} \times y\% = x \text{ mg vitamin C}$$

Where  $y\% = \%DV$   
 $x =$  value for amount of vitamin C

*VITAMIN A –*

The DV for vitamin A used on the food label is 5000 IU. The constant for the first part of the equation is 5000 mg. Please note that the DV uses IU for measure of vitamin A. The %DV for vitamin A in RE may not be calculated because at this time there is no DV for vitamin A in RE.

$$5000 \text{ IU} \times y\% = x \text{ IU vitamin A}$$

Where  $y\% = \%DV$   
 $x =$  value for amount of vitamin A

## Example of Converting from % DV to Nutrient Value

The following is an example of nutrients listed on a food label or nutrition information sheet. The label used in the example to demonstrate the methodology is for illustrative purposes only.

### Nutrition Facts

Serving Size: 1 cup (228 g)

Servings per Container: 2

#### Amount per Serving:

Water	40 g
Calories	260 calories
Protein	5 g
Total Fat	13 g
Saturated Fat	5 g
Polyunsaturated Fat	8 g
Monounsaturated Fat	0 g
Carbohydrate	31 g
Dietary Fiber	3 g
Total Sugar	5 g
Ash	10 g
Cholesterol	30 mg
Sodium	660 mg
Calcium	15%
Iron	4%
Vitamin C	2%
Vitamin A	4%

#### *CALCIUM*

$$1000 \text{ mg} \times 15\% = 150 \text{ mg Calcium/serving (228 g)}$$

$$150 \text{ mg}/228 \text{ g} = x/100 \text{ g} = 65.7 \text{ mg Calcium}/100\text{g}$$

#### *IRON*

$$18 \text{ mg} \times 4\% = .72 \text{ mg Iron/serving (228 g)}$$

$$.72 \text{ mg}/228 \text{ g} = x/100\text{g} = .32 \text{ mg Iron}/100 \text{ g}$$

### VITAMIN C

$$60 \text{ mg} \times 2\% = 1.2 \text{ mg vitamin C/serving (228 g)}$$

$$1.21 \text{ mg}/228 \text{ g} = x/100\text{g} = .53 \text{ mg vitamin C}/100\text{g}$$

### VITAMIN A

$$5000 \text{ IU} \times 4\% = 200 \text{ IU/serving (228 g)}$$

$$200 \text{ IU}/228 \text{ g} = x/100 \text{ g} = 87.7 \text{ IU vitamin A}/100 \text{ g}$$

If the percentage listed for vitamin A, vitamin C, iron or calcium is “less than 2 percent”, as indicated on the food label, the user must enter zero into the equation.

## Edit Food Items in the Local Database

*The user must be able to edit the data entered for user-added food items.*

Additional recommendations:

Prompt the user to save edited data.

Include a system of protecting user-entered nutrient data from accidental change. For example, add a confirmation message that shows before saving any changes.

## Delete Food Items in the Local Database

*The user must be able to delete user-added food items from the software program's database.*

*The user or developer may not delete food items from the CN-D. Food items may be moved to a working database to create a smaller subset of items. CN-D food items may be copied, downloaded, or linked to this working database. The identity of the CN-D food item must be maintained. Food items may be hidden to create a smaller subset of food items, as long as the user can view and re-activate any or all CN-D food items, if desired.*

Additional recommendations:

Require the user to confirm deletion of all data before it is deleted.

## Frequently Asked Questions Related to Adding Food Items to the Local Database:

- 1) *May we include nutrient data for additional nutrients that are not required by USDA for NSMP?*

While we recommend that only the nutrients required for NSMP are included, developers may include other nutrients in the software program. The optional nutrients in the CN-D, *trans* fat, moisture, and ash, may be included without tagging or marking these nutrients. Nutrients required for NSMP or provided in the CN-D must be shown on a separate report or display. If a small number of additional nutrients are added, it is acceptable to separate the required nutrients from the other nutrients on the reports and displays, such as including them in a separate section or including a line to separate the required nutrients from the others. A small number of additional nutrients may also be marked with a symbol or code. Any codes or symbol used to mark nutrients not included in the CN-D must be defined in a key or legend wherever it is used.

- 2) *Why is vitamin A not provided in RAEs? May we include RAE values?*

Retinol activity equivalent (RAE) values may be included; however, they are not required by NSMP at this time and should not be included with the required nutrients. There may be a significant number of missing values for RAE at this time because it is not required on the food label. It is expected that the currently required RE unit for vitamin A will be replaced by RAE in the future.

- 3) *What is the conversion factor from RAE to IU?*

At this time, there are no simple “rule of thumb” conversions from RAE to IU. At this time, software developers should not attempt to make a conversion between RAE and IU.

- 4) *How many digits should we allow in the field for nutrient values?*

The software program should allow at least five whole numbers plus three decimal places (eight digits plus a decimal point) for entry of nutrient values. It is recommended that software programs allow entry for and show no more than three decimal places (thousandths) for any nutrient values. The CN-D shows a maximum of three decimal places and the requirement for user-entered ingredients is three decimal places.

- 5) *May we prevent the user from saving data that triggers a data entry error?*

For the data entry errors related to the calculated vs. user-entered calories and gram weight, we recommend that the user be able to save the data even if the error message is shown. Error messages are meant to be a method of reducing data entry errors and will prompt the user to check the data. However, if the saturated fat is greater than the total fat, the developer may prevent the user from saving the data.

6) *May we prevent the user from saving data that is missing nutrient values?*

The only data available to the user may be missing some nutrient values. It is acceptable to allow the user to save data that is missing nutrients. The missing nutrient data and any totals that include the missing nutrient data must be marked as including missing nutrient data. In the past some developers have not allowed the user to save data that is missing the macronutrients (fat, carbohydrate, protein) or calories. This is acceptable. The developer may also prevent the user from saving food items that have no nutrient data. We recommend that the developer show a warning message to the user when no nutrient data is entered for an ingredient.

7) *May we include data from the SR that is not included in the CN-D?*

If data from the SR is included in the approved software program, data from the CN-D must take precedence. Duplicate data from the SR may not be provided as both a SR item and a CN-D item in the approved software program. The duplicate SR item must be removed from the program's database. The SR data that is included as part of the CN-D must not be updated until it is updated with the next CN-D release. Food items from the SR must be tagged differently than foods from the CN-D.

8) *May we show the %DV for other nutrients in addition to iron, calcium, vitamin A, and vitamin C?*

Yes. It is not a requirement to show the user the %DV for any nutrient. If desired, the software program may show the %DV for other nutrients, as long as there is a DV established by the Food and Drug Administration (FDA) for use on the food label. Refer to the Food section of FDA's Web site (<http://www.fda.gov/food>) for DVs for other nutrients. However, it is not necessary to show the %DV and it is of limited value to the user since further calculations and comparison to the nutrient standard are based on actual nutrient values. The software program must allow the user to enter the %DV from the food label when entering local food items for four nutrients (iron, calcium, vitamin A, and vitamin C), so that actual nutrient values can be calculated by the software program.

9) *Do we need to show the %DV for all nutrients?*

No. The purpose of the %DV is to allow the user to enter the %DV from a food label and obtain a nutrient value. The software program only needs to provide a field for the user to enter a %DV for calcium, iron, vitamin C, and vitamin A. This field does not need to be displayed after the nutrient value is calculated and saved.

## **Food Item Nutrient Analysis Report**

*The software program must create a Food Item Nutrient Analysis Report that lists the food items in the software program's database (from the CN Database [CN-D] and local sources) with their associated nutrient values.*

*The user must be able to search for desired food items by individual description or ID number (CND# or locally assigned ID number).*

*The user must be able to search by a range of descriptions or ID numbers. The user must be able to include multiple food items in this report.*

Additional Recommendations:

*Allow the user to also search by category (or multiple categories).*

*Provide the user with the option to create the Food Item Nutrient Analysis Report for all food items. The user should be able to create a set of all food items, if desired, by selecting different categories or ranges of ingredients. The software developer may require the user to select different categories or ranges of ingredients rather than allowing the user to select "all" to create one large set of all the ingredients.*

*Allow the user to display this report before printing because of the large data set that may be requested. Also, recommend confirmation before printing large reports, such as a report of all the food items in the database.*

### **Frequently Asked Questions about the Food Item Nutrient Analysis Report**

1) *Do we have to allow the user to print all food items at one time?*

Some software developers have expressed concern about the quantity of data being generated when the user selects "all" for recipes, food items, or the entire CN-D. The program does not have to allow the user to select "all" for reports for any of the software programs' databases. However, the user must be able to display or print, if desired, a complete set of CN-D and other locally-added data. This can be done by selecting smaller subsets of data, such as by category or a range of the alphabet. The developer may include the data from a subset of food items used by the user, such as a working or local database in addition to the CN-D data.

## ***Production Recipes***

### **Create Recipes**

*The software program must allow the user to create and save user-added recipes. Recipes should be entered as “production recipes” with raw ingredients and amounts for production staff to use during food preparation.*

*The user must be able to enter the recipe category, recipe number, recipe name, and the name/description of ingredients.*

*The user will specify the yield (or number of portions) per recipe. The number of servings will refer to the number of servings a recipe will yield.*

*The user must be able to enter two units of measure descriptions with amounts for the same ingredient, if needed. For example, if the ingredient in a recipe is all purpose flour and the preparation amount is 1 cup + 1 tbsp, the user must be able to enter “1 cup” plus “1 tablespoon”. If the ingredient in a recipe is low fat milk and the preparation amount is 1 quart – 3 tbsp, the end user must be able to enter “1 quart” minus “3 tablespoons”. However, if there is only one unit of measure for an ingredient, the user must be able to enter only one unit of measure and then move to the next ingredient without entering a second unit of measure. The user must be able to enter values as decimals or fractions.*

*The user must be able to select from the required units of measure, including volume where applicable, for each ingredient. For all ingredients, the user must be able to select gram, ounce, pound, and, optionally, kilogram. For ingredients with a volume conversion, the user must be able to select teaspoon, tablespoon, cup, pint, quart, and gallon. Fluid ounce must only be provided as a choice if it is provided in the Weights file of the Child Nutrition Database (CN-D) or added by the user (or developer) for appropriate ingredients. “Each-type” units of measure, such as “slice” or “serving” must also be provided if in the Weights file or added by the user.*

*The ingredient sequence number must automatically be created by the software program.*

*The user must be able to enter the serving size of a recipe portion.*

*The user must be able to enter the serving unit of measure related to the recipe yield. For example, the recipe yield might be expressed as cups, servings, gallons, sandwiches, ounces, portions, pieces, pounds, and so forth.*

*The user must be able to specify the size of a serving (such as,  $\frac{1}{2}$ , 1-1/2, 2, and so forth). The amount should modify the serving unit of measure to create a complete serving description, such as  $\frac{1}{2}$  tortilla, 1-1/2 cups, or 2 slices, and so forth. The user must be able to enter values as decimals or fractions.*

*The user must be able to adjust the serving size, as needed, if a different serving size is served to some age or grade groups. This may be done at the recipe level or the menu planning level.*

*The user must be able to enter a moisture or fat change (gain or loss) factor, if applicable. For some purchased food products, a moisture or fat change percentage must be applied to the weight of the recipes for these products to determine the “as consumed” nutrient composition of the recipe. Some products may have both a moisture and fat change. Data are expressed as percentages of change in total recipe weight due to moisture or fat gains or losses as a result of cooking. Currently, this application is used most frequently in school food service with pre-prepared foods that are fried, for example, frozen pre-cooked chicken nuggets which are fried before serving.*

*The user must be able to select the type of fat that was used in preparation. This fat must be used to calculate the fat change. The user must be able to select any of the fats or oils listed in the CN-D to use as the type of fat gained or lost during cooking.*

Refer to the guidance document *Moisture and Fat Changes in Recipes* (<http://healthymeals.nal.usda.gov/software-support.html>) for more information.

*The software program must calculate the nutrient analysis of each recipe.*

*The software program must calculate the nutrient analysis of each recipe by adding the nutrient amounts contributed by each ingredient. The nutrients per serving are calculated by dividing the total nutrient values from all ingredients in the recipe by the number of servings.*

*The nutrient analysis of each recipe must be based on the “as consumed” product using the Yield Factor Method or similar means to account for changes in nutrient content during preparation. Users must be instructed to enter recipes correctly to obtain a nutrient analysis that accounts for changes during preparation. Changes in nutrient content and yield must be included in the nutrient analysis calculations. For example, a recipe that calls for raw macaroni, raw beef and raw vegetables will have a very different nutrient analysis if raw ingredients and amounts are used instead of cooked ingredients. Cooked nutrient analyses and amounts must be used for all ingredients that change significantly during cooking to obtain an analysis based on the “as consumed” product. For more information about the nutrient analysis of recipes, refer to the documents **Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI** (<http://healthymeals.nal.usda.gov/software-support.html>) and **Nutrient Analysis Protocols: How to Analyze Menus for USDA's School Meals Programs** (<http://teamnutrition.usda.gov/Resources/nutrientanalysis.html>). Users will need to be instructed to enter recipes correctly to obtain a nutrient analysis that accounts for changes during preparation.*

*The user must be able to review the nutrient information for each recipe in the software program's database.* The software program must allow the user to review the nutrient values on a "per serving" basis.

*The user must be able to save the nutrient analysis of the recipes.* The software program must display the nutrient analysis of the recipe on a "per recipe" or "per serving basis" and correctly calculate the nutrient analysis of multiple or fractional serving sizes of the recipe, such as 3 cups or ½ slice).

OPTIONAL - The user may have the ability to enter a "Provides" statement for the Food Based Menu Planning (FBMP) system, such as "provides 2 ounces meat/meat alternate and 2 bread servings", if desired. The software must not calculate the credit information for FBMP for a given recipe or food product.

OPTIONAL - The user may be able to list recipes that contain a certain ingredient, e.g., certain foods from the United States Department of Agriculture (USDA) Foods Distribution Program (USDA Foods; formerly commodity foods). For example, flag recipes which use USDA ground turkey.

Additional recommendations:

Allow the user to enter the same ingredient more than once in a recipe. Many times a recipe will call for the same ingredient more than once in the recipe. By allowing the user to add the ingredient twice, it is easier for the staff preparing the recipe to follow the recipe and easier to calculate the nutrient analysis based upon an "as consumed" product.

Allow the user to enter or note additional information about the serving in the same or separate field, if the serving size field is not long enough. This allows the user to enter additional descriptive information regarding the serving, such as a scoop or ladle size or dimensions of a piece. This information will be descriptive of the type of serving used to yield the recipe, for example, #16 scoop or 2" X 2" pieces.

Allow the user to enter amounts for ingredients as fractions, instead of decimals. Since fractions are more commonly used in food service, such as 1-1/2 cups instead of 1.5 cups, the user should be able to enter fractions when entering ingredients. The user must be able to enter a decimal or fraction.

## **Edit the Recipes in the Local Database**

*The user must be able to modify (edit) existing user-added recipes in the program's database.* The user must be able to save edited recipes under the same recipe number or rename and save them under a new recipe name and number. The user should have the option to save an edited recipe as a new recipe, either by copying the recipe to a new recipe before editing or saving an edited recipe with a new name and number.

*The user must be able to add an ingredient with the appropriate amounts and measures.*

*The user must be able to modify the sequence in which the ingredients of a recipe appear.*

*The user must be able to change or edit the amount of one or more ingredients, using the amount and measure field.*

*The user must be able to delete an ingredient.*

*The user must be able to edit the serving information for the recipe, including the yield (number of servings) and serving size (description and amount).*

*The user must be able to search the food item database and replace an existing ingredient with a new ingredient. The user may need to replace recipe ingredients, such as when food items are removed from the CN-D or alternate ingredients are used (such as using blueberries instead of strawberries) or alternate ingredients are used.*

*The user must be able to add, change, or delete moisture and fat change factors.*

*The user must be able to change the type of fat used in a recipe.*

*The software must be able to re-calculate nutrient totals for recipes.*

*The software must be able to re-calculate nutrient totals for all recipes at one time (for example, when the program is updated to the next CN-D release).*

## **Search for Recipes in the Local Database**

*The user must be able to obtain a list of previously created recipes by searching by recipe number or recipe name.*

Additional Recommendations:

Allow the user to search for recipes by food categories. These categories may be developer-created, user-created, USDA categories from the CN-D, or modified USDA categories.

## **Recipe Report**

*The program must create a Recipe Report for use by food service staff. The Recipe Report must be in a format suitable for food service staff to use for production. The format for food service should be similar to a recipe card.*

*The Recipe Report must include the following components:*

- (1) recipe number
- (2) recipe name
- (3) portion size
- (4) yield of recipe (number of servings)
- (5) ingredients and amount of each ingredient in appropriate units for food service (fractions must be used)
- (6) preparation instructions
- (7) nutrient analysis of the recipe per serving

*Fractions must be shown for the ingredient amounts on the Recipe Report.*

*Ingredients and amounts must be displayed as a production (or cook's) recipe with the raw ingredients before preparation or cooking.*

*The Recipe Report must include the nutrient analysis for the required nutrients. The following required nutrients must be included for all nutrient analyses: vitamin A, vitamin C, iron, calcium, fat, cholesterol, saturated fat, sodium, fiber, calories, protein, and carbohydrate. For recipes the percent of calories from fat, saturated fat, carbohydrate, and protein must also be shown. Additional nutrients may be shown, such as the optional nutrients, water, ash, and trans fat included in the CN-D.*

*The nutrient analysis of each recipe must be based on the "as consumed" product using the Yield Factor Method or similar means to account for changes in nutrient content during preparation. Refer to Create Recipes in the Production Recipes section of this document for more information about the Yield Factor Method of recipe entry*

*Nutrients not included in the CN-D must be separated from the CN-D nutrients or marked with a code to indicate that these nutrients are not required by USDA or from the CN-D. (See Enter Food Items into the Local Database in the Create, Update, and Save Food Items in the Local Database section of this document.)*

*Nutrient totals that include missing nutrient data must be marked. Any nutrient totals that include missing data for one or more nutrients must be marked as including missing nutrient data. (See Nutrient Data in the CN-D in the Child Nutrition Database section of this document.)*

*The convention or coding system used to show missing nutrient data must be defined in a key or legend.*

*The user must be able to search by recipe name and ID number to select recipes to include on the Recipe Report.*

*The user must be able to create a Recipe Report for all recipes, if desired. The user must be able to create a set of all recipes, if desired, by selecting different ranges of*

descriptions or ID#s. The software developer may allow the user to select “all” to create one large set of all the recipes.

*The user must be able to display and print the Recipe Report.*

Additional Recommendations:

Allow the user to select search for recipes to include on reports by searching by recipe category.

Allow the user to search for recipes using description (or keyword).

## **Recipe Nutrient Composition Report**

*The program must create a Recipe Nutrient Composition Report which summarizes the detailed nutrient content of the recipe.*

*The Recipe Nutrient Composition Report must include the nutrient analysis of each ingredient.*

*The Recipe Nutrient Composition Report must include the total nutrient analysis of the recipe.*

*The Recipe Nutrient Composition Report must include the “per serving” nutrient analysis of the recipe.*

*The nutrient analysis of each recipe must be based on the “as consumed” product using the Yield Factor Method or similar means to account for changes in nutrient content during preparation. Refer to Create Recipes in the Production Recipes section of this document for more information about the Yield Factor Method of recipe entry.*

*The Recipe Nutrient Composition Report must include the required nutrients. The following required nutrients must be included for all nutrient analyses: vitamin A, vitamin C, iron, calcium, fat, cholesterol, saturated fat, sodium, fiber, calories, protein, and carbohydrate. For recipes the percent of calories from fat, saturated fat, carbohydrate, and protein must also be shown. Additional nutrients may be shown, such as the optional nutrients, water, ash, and trans fat included in the CN-D. (See Create, Update, and Save Food Items in the Local Database section of this document.)*

*Nutrients not included in the CN-D must be separated from the CN-D nutrients or marked with a code to indicate that it these nutrients are not required by USDA or from the CN-D.*

*Nutrient totals that include missing nutrient data must be marked. Any nutrient totals that include missing data for one or more nutrients must be marked as including missing nutrient*

data. (See Nutrient Data in the CN-D in the Child Nutrition Database section of this document.)

*The convention or coding system used to show missing nutrient data must be defined in a key or legend.*

*The user must be able to search by recipe name and ID number to select recipes to include on the Recipe Nutrient Composition Report*

*The user must be able to create a Recipe Nutrient Composition Report for all recipes, if desired. The user must be able to create a set of all recipes, if desired, by selecting different ranges of descriptions or ID#s. The software developer may allow the user to select "all" to create one large set of all the recipes.*

*The user must be able to display or print the Recipe Nutrient Composition Report.*

Additional recommendations:

Allow the user to select search for recipes to include on reports by searching by recipe category.

Allow the user to search for recipes using description (or keyword).

## **Adjust the Yield of a Recipe**

*The software must be able to adjust the quantities of each ingredient to the amount required to produce a user specified number of servings of the recipe. Since this report would be the recipe used in food preparation, it should be in a recipe format and use terms easily understood by food service personnel.*

*Fractions must be used, not decimals.*

*The yield-adjusted amounts must be shown with each recipe ingredient.*

*The original recipe must be maintained as the basis for future adjustments. All yield adjustments should be made without changing the ingredient amounts or number of servings in the original recipe.*

*The user must be able to print the yield-adjusted recipe in a recipe format suitable for food service staff to use for production. Recipes should be entered as "production recipes" with raw ingredients and amounts for production staff to use during food preparation. For example, a recipe for meat sauce that uses raw ground beef, that is then cooked, should list the raw ground beef with the ingredient amount. Ingredients that have been replaced with "as consumed" or cooked ingredients or amounts for the nutrient analysis should not be shown on this report. The format for food service should be similar to a recipe card.*

## **Recipe/Ingredient Cross Reference Report**

*The user must be able to search for recipes that contain specific ingredients.*

*The software program must allow the user to display or print a report of this information (preferable to allow the user to both print and display).*

*The report must identify the ingredient for which the user searched.*

Additional Recommendations:

*For software programs that link a local food item database such as an inventory or “working” database, to the CN-D food items, allow the user to search for ingredients that are used in recipes from both the CN-D and the local database.*

## **Voluntarily Added USDA Production Recipes**

Inclusion of the *USDA Recipes for Schools* (referred to in this document as the USDA production recipes), developed by USDA for use by schools participating in the Child Nutrition Programs, as production recipes is not required. If these production recipes are added to the software program by the developer, they will be checked. Instructions for the inclusion of the USDA production recipes are included in under USDA Recipes in the Optional Functions section of this document.

## **Frequently Asked Questions about the Production Recipes**

1) *What is the Yield Factor Method of recipe entry?*

The Yield Factor Method of recipe entry allows the user to enter ingredients and amounts that reflect the “as consumed” product. This method will account for changes in nutrients and yields that occur during preparation and cooking. If raw ingredients and amounts are used for the nutrient analysis, the nutrient analysis will not be an accurate representation of what is actually eaten or consumed. For example, if a recipe includes raw rice in the ingredient list, but the rice is cooked in the preparation of the recipe, the amount of rice must be adjusted to the cooked or “as consumed” amount. For example, if a recipe calls for 3 cups of raw, long grain, white rice, the nutrient analysis must use 9.75 cups of cooked, long grain, white rice as the cooked yield to calculate the nutrient values. The amount must be adjusted for yield changes during preparation AND the nutrient analysis must be based on the cooked, not raw, rice. Ingredients that typically have significant changes to nutrients and amount during preparation include meats, pasta, rice, and vegetables.

- 2) *Where can I find more information about calculating the nutrient analysis of recipes as the “as consumed” product?*

The recipe guidance document, *Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI* (<http://healthymeals.nal.usda.gov/software-support.html>) provides guidance to software developers about methods that can be used to analyze recipes to obtain an accurate nutrient analysis that reflects changes to nutrients from preparation. The manual ***Nutrient Analysis Protocols: How to Analyze Menus for USDA's School Meals Programs*** (<http://teamnutrition.usda.gov/Resources/nutrientanalysis.html>) also includes information about entering recipes to obtain an “as consumed” nutrient analysis. Developers may ask the Software Evaluation Coordinator to review their planned methodology for analyzing recipes.

- 3) *May we require the user to create raw ingredients with yield factors instead of entering cooked ingredients and amounts?*

Yes. The software developer may use a system of entering yield factors to the ingredients to obtain the “as consumed” (or cooked) nutrient analysis of a recipe. Developers must instruct the user as to the correct way to assign yield factors to the ingredients. It must be clear to the user which ingredients or units of measure have yield factors applied to them and whether the nutrient analysis is for the raw or cooked ingredient.

- 4) *Do we have to allow the user to print all the recipes at one time?*

Some software developers have expressed concern about the quantity of data being generated when the user selects “all” for recipes, food items, or the entire CN Database. The program does not have to allow the user to select “all” for reports for any of the software programs' databases. However, the user must be able to display or print, if desired, a complete set of data. This can be done by selecting smaller subsets of data, such as by category or a range of the alphabet. The user may also restrict the data to the working database or subset of data used by a user.

## **Measure Conversions**

*The software program must automatically convert weight and volume data to standard units of measure for the user.* For entry of ingredients in recipes or on menus, the software program must provide the user with more than the measure-to-gram weight conversions contained on the food label or in the Weights file of the Child Nutrition Database (CN-D). The software program must calculate the universal conversions from one weight to any other weight (e.g. 100 g to lb) and from one volume measure to any other volume (e.g. cup to gallon). These are universal conversions that can be easily calculated using standard conversion factors. Conversion tables are available from many sources, including most cookbooks.

*The software program must convert weight data to standard weight units of measure for the user.* All ingredients should automatically be available in all standard weights:

- pound (lb)
- ounce (oz)
- gram (g)
- kilogram (kg) [optional]

Since the CN-D provides nutrient values on a weight basis (per 100 gram of the food item, the nutrients can be easily calculated for any other weight. If fractional or multiple weight units of measure are provided, such as “3 ounces” or “1/2 pound”, the standard weight conversions must also be made available.

*The software program must convert volume data to standard volume units of measure for the user.* If the weight of any volume measure is available (through the CN-D Weights file or by user entry), the following volume measures must be available to the user:

- teaspoon (tsp)
- tablespoon (tbsp)
- cup (c)
- pint (pt)
- quart (qt)
- gallon (gal)

If any volume measure is given in the Weights file, the gram weights of any standard volume measure can be easily calculated, and the nutrients for any volume can be determined. If fractional or multiple volume units of measure are provided, such as “1/2 cup” or “2 tablespoons”, the volume conversions must also be made available.

*The software program must provide additional units of measure for the user, if included in the Weights file or provided by the user.* If data on additional measures, such as “each-type” units of measure (“piece”, “slice”, “portion”, and so forth), is provided in the Weights file or by the user, this data must also be available to the user.

*The software program must not globally convert to the fluid ounce unit of measure for all food items.* Although it would be mathematically correct, because fluid ounce is typically used for liquids, it would look awkward for non-liquid foods like flour, salt, sugar, and so forth. Mixing the use of ounces (weight) and fluid ounces (volume) can be confusing to food service staff and

result in errors in measurement. Therefore, it is required that there are *no* global conversions to fluid ounce by the software program. It is acceptable for fluid ounce, typically used for liquids, to be included only if a fluid ounce entry is provided in the WEIGHTS file. The software developer or user may also add this data, if appropriate for the food item, but a global conversion to fluid ounce for all food items is not permitted.

*Parenthetical information that becomes inaccurate when the unit of measure is converted to other units of measure must be removed.* Some units of measure in the CN-D contain parenthetical (or auxiliary) information, which is extra information in parenthesis that describes the unit of measure. This includes dimensions for piece-type units of measure or conversions to the prepared amount. In some cases, especially with volume units of measure, this information becomes inaccurate when the unit of measure is converted to another unit of measure. For example, “cup (yields 2 cups whipped)” becomes inaccurate when converted to “gallon”, as the “gallon” no longer yields 2 cups whipped. Because this is an issue with the data in the CN-D, software developers may remove all information in parenthesis that follows a unit of measure in the Measure Description (Measure\_desc) field in the Weights file. Because useful information about “each-type” units of measure, such as dimensions or package size, will be lost if all parenthetical information is removed, recommend only removing the parenthetical information for specific measures (or groups of measures) for which this information becomes incorrect when conversions are made.

*Units of measure from the Weights file must be tagged as USDA.* The user must be able to determine which units of measure were provided by the United States Department of Agriculture (USDA) in the Weights file of the CN-D. The developer must have a way of listing or marking the Weights file units of measure so it is clear to the user that these units of measure were provided by the CN-D. The developer may use a code, symbol, abbreviation, or grouping system to tag the units of measure. The developer may also mark other sources of measurement data, such as developer-added or user-added, but it is not required.

*All required universal conversions must be tagged as developer-added.* For example, if “cup” is provided in the Weights file and the software program converts to teaspoon, tablespoon, pint, quart, and gallon, then “cup” must be tagged as a Weights file unit of measure and the others must appear as developer-added units of measure.

*Any conversions to whole units of measure from a fractional or multiple unit of measure must also be tagged as developer-added.* For example, if “1/2 cup” is provided in the Weights file and the developer creates a “1 cup” unit of measure from this 1/2 cup, only the 1/2 cup unit of measure may be tagged as “USDA”.

*It must be clear that any global conversions (conversions for all ingredients) to additional units of measure provided by the software developer are not provided by USDA.* For example, if the developer chooses to provide conversions to can sizes or scoop sizes, it must be clear that these were not provided by USDA.

*The software program must convert nutrient data internally for use in nutrient analysis reports and displays for food items, recipes, and menus.* The developer may determine the units upon which the nutrient data is displayed, except where instructed otherwise in this specifications document.

The software developer must convert to other units of measure using the following equation:

$$a/b = x/y$$

where a = nutrient amount per original serving  
b = weight of original serving size  
x = nutrient amount per new serving size  
y = weight of new serving size

**Example of Converting Nutrient Data from Nutrients per Serving to Nutrients per Other Units of Measure:**

Using the food label below, convert the nutrients per one cup serving to nutrients per quart.

**Nutrition Facts**

Serving Size: 1 cup (228 g)  
Servings per Container: 2

**Amount per Serving:**

Water	40 g
Calories	260
	calories
Protein	5 g
Total Fat	13 g
Saturated Fat	5 g
Polyunsaturated Fat	8 g
Monounsaturated Fat	0 g
Carbohydrate	31 g
Dietary Fiber	3 g
Total Sugar	5 g
Ash	10 g
Cholesterol	30 mg
Sodium	660 mg
Calcium	15%
Iron	4%
Vitamin C	2%
Vitamin A	4%

1 cup = 228 grams

4 cups = 1 quart, so 1 quart = 912 grams (228 X 4)

WATER	40 g/228 g = x/912_g	= 160 g Water/912 g
CALORIES	260/228 g = x/912 g	= 1040 Calories/912 g
PROTEIN	5 g/228 g = x/912 g	= 20 g Protein/912 g
TOTAL FAT	13 g/228 g = x/912_g	= 52 g Total Fat/912 g
SATURATED FAT	5 g/228 g = x/912 g	= 20 g Saturated Fat/912 g
TRANS FAT	1 g/228 g = x/912 g	= 4 g Trans Fat/912 g
CARBOHYDRATE	31 g/228 g = x/912 g	= 124 g Carbohydrate/912 g
FIBER	3 g/228 g = x/912_g	= 12_g Fiber/912 g
ASH	10 g/228 g = x/912 g	= 40 g Ash/912 g
CHOLESTEROL	30 mg/228 g = x/912 g	= 120 mg Cholesterol/912 g
SODIUM	660 mg/228 g = x/912 g	= 2640 mg Sodium/912 g
CALCIUM	150 mg/228 g = X/912 g	= 600 mg Calcium/912 g
IRON	72 mg/228 g = x/912 g	= 228 mg Iron/912 g
VITAMIN C	52 mg/228 g = x/912 g	= 208 mg/912 g
VITAMIN A	200 IU/228 g = x/912 g	= 800 IU/912 g

Additional recommendations:

It is recommended that the software program also not automatically convert to the liter and milliliter units of measure for non-liquid ingredients. These are typically used for liquid ingredients in Canada and European countries.

Show the parenthetical (or auxiliary) information as a reference for the user. Because this parenthetical information includes valuable information about the unit of measure, it is recommended that the full measure description be included with the original unit of measure as a reference for the user. This can be included in a separate section or link instead of with the complete list of available units of measure. It does not need to be shown with the converted units of measure.

## Frequently Asked Questions Related to the Measure Conversions

- 1) *Do we need to have an abbreviation or code for the source of all units of measure provided?*

No. The user must be able to determine which units of measure were provided in the Weights file of the CN-D. If the program simply marks the Weights file units of measure or provides them in a separate, labeled section, the requirement is met. The software may tag other units of measure to allow the user to identify the source, but it is not required.

- 2) *Do we need to mark the source of the unit of measure in more than one place?*

Yes. The user needs to be able to determine the source of the units of measure at the recipe level and menu level, if the user can add food items directly to a menu. When creating or editing a recipe, the user must be able to view the source of the unit of measure. It is acceptable to require the user to click a link or open a window to view the source of the units of measure. For example, the software program may require the user to click on a link back to the food item information. The user must not be required to exit the recipe or menu functions and open a new function to view this information.

- 3) *What do you mean by “global” conversions?*

This refers to any conversions to units of measure that are made for all food items. This includes the required conversions. Some software developers have also chosen to convert to additional units of measure for all food items. This is acceptable as long as it is clear that these units of measure were not provided by USDA. The conversions must also be correct and appropriate

- 4) *Do we need to make conversions for all of the units of measure provide for a food item in the Weights file of the CN-D?*

Many food items in the CN-D have more than one volume measure. For example, there may be a tablespoon and a cup measure listed. Also, there may be multiples of the same unit of measure with different preparation methods, such as “cup, sliced” and “cup, mashed”. The developer is only required to convert to the required units of measure for one of the volume measures. The developer should only convert from one unit of measure, if there is no extra descriptive information, such as cup and tablespoon, or the descriptive information is the same, such as “cup, mashed” and “tablespoon, mashed”. However, it is recommended that the software developer convert for all units of measure that have a different preparation description, such as “cup, sliced” and “cup, mashed”, so the user has more flexibility when choosing ingredients for recipes and menus.

- 5) *If there is more than one unit of measure with the same or no preparation method, such as tablespoon and cup, which one do we use for the conversions?*

For some CN-D food items there is more than one unit of measure with no extra information, such as “cup” and “tablespoon” or with the same preparation information, such as “cup, mashed” and “tablespoon, mashed”. The gram weights for the volume measures may not be the same for both measures. For example, if cup = 120 grams and tablespoon = 8 grams are both present, using the 1 tablespoon would yield a cup weight of 128 grams. Because weight data is obtained from multiple sources, such as actual weight, label data, and so forth, there may be different gram weights for the same unit of measure. In this case, it is recommended that the software developer use the “cup” measure, when available, as the basis for conversions.

- 6) *Are there any volume units of measure for which we do not have to make conversions?*

Generally, if a volume measure is presented as an “each-type” measure, such as “portion ½ cup” or “serving cup”, the developer does not have to make the required conversions for the unit of measure. It may be treated as an “each-type” measure, such as “slice” or “piece”. Software developers are encouraged to contact the Software Evaluation Coordinator for guidance with handling units of measure that do not meet the standard format used in the CN-D.

- 7) *May we allow global conversions to liter and milliliter if we have international users who use the metric system?*

Yes. It is recommended that the software program does not globally convert to liter and milliliter because these are not typically used in the United States. However, software developers who sell the same program to international users may include the global conversions to liter and milliliter for liquid ingredients.

## **Creation of Menus**

*The program must allow the user to create cycle or calendar menus for meals, including breakfast, lunch, snacks, dinner (supper), and special meals, for user-specified sites. Although there are no nutrient standards for snacks or dinner meals, the ability to plan the menus using the software program for production reasons would be desirable.*

*The program must allow the user to create sites for the different groups served, such as different schools, different grades, or whatever groups the school uses to organize their food service system.*

Additional Recommendations:

*Allow the user to add special groups, such as child care programs, senior citizens, and other groups, that may be unique to a specific school.*

### **Menu Fields**

*For each menu, the user must be able to enter the following fields:*

*location/site,  
meal (breakfast, lunch, snack),  
age/grade group served,  
feeding figure (total count or number served), and  
nutrient standard for age/grade group and meal, such as Age 14-17 Lunch (1/3 of RDA for Lunch).*

These fields may be include in different functions or places in the software program related to the menus. For example, the developer may have the user set up menus that can be assigned to specific site or age/grade group later in the menu planning process.

*For each menu, the user must be able to enter either a cycle name/number, week, and cycle day OR a calendar day (Sunday to Saturday) and calendar date. Programs may offer both cycle and calendar menus or have a system of creating menus that are later assigned to calendar dates.*

*The user must be able to create menus for weekends, i.e. Saturday and Sunday, if desired.*

Additional Recommendations:

*Provide a field that allows the user to enter reimbursable vs. a la carte/adult counts for the number of servings of menu items and feeding figure (number of students served). Because schools can only include reimbursable meals in their nutrient analyses, yet most also serve a la carte items and non-student customers, it will be helpful to the user to include a way to mark the items accordingly. Only reimbursable servings of menu items may be included in the nutrient analysis.*

*Add text to indicate that the Nutrient Standards are 1/3 of the RDA for Lunch or ¼ of the RDA for Breakfast. This text can be added to the screen where the nutrient standards are selected and to the menu nutrient analysis reports.*

## **Standard Menu Items**

*The user must be able to enter standard menu items only once for all days or selected days. Standard menu items are those menu items that are served daily or frequently, such as condiments, milks, salads, and so forth. At a minimum the user must be able to create a menu of the standard items which can be saved and copied to new menus before adding the remaining menu items. However, it is recommended that the program have a system of setting up sets of standard menu items, so they can easily be assigned repeatedly to menus (i.e. placed in a menu without having to search for and add the same items for each day of the menu).*

## **Create Menus**

*The user must be able to create menus by entering menu items (from the software program's food item or recipe database) with the planned serving size and amount.*

*The user must be able to enter the feeding figure (or planned number of reimbursable meals) for the menu and the planned number of servings for each menu item.*

*If the user can create menus using both cycle menu and calendar menu functions, the same functionality must be available for creating standard menu items, editing menus, and copying menus.*

*The user must be able to assign the menus to a calendar. This may be done when the menu is created or later in the menu planning process.*

Additional Recommendations:

*Allow the user to enter a "menu name" that is shorter than the full recipe or food item name and more suitable for a calendar menu to be posted or sent home with students.*

## **Edit Menus**

*The user must be able to edit (make changes) to the menus.*

*The user must be able to adjust the serving size for each age or grade group. This may be done at the recipe level or the menu planning level.*

*The user must be able to re-order menu items.*

*The user must be able to delete menu items that are no longer desired.*

Revised December 2010

Additional Recommendations:

*Apply edits forward to cycle or calendar menus that include the edited meal or menu. If a menu is edited, the edits should be applied to any menu ranges, cycles, or calendar menus that include the edited menu. The user may be given a choice to apply or not apply the edits. If the edits are not applied forward, the user should be alerted.*

## **Copy Menus**

*The user must be able to copy menus from one day or date to another day or date.*

*The user must be able to copy menus and assign them to a different site or nutrient standard. For example, the user must be able to copy menus created to high school and assign them to middle school OR the user must be able to take menus assigned to the nutrient standard for grades K-6, copy them, and assign them to the nutrient standard for grades 7-12.*

*The user must be able to copy a range of menus, such as a range of days in a cycle or a range of dates.*

*The user must be able to change the serving size, number of servings, and feeding figure on the copied menus.*

## **Frequently Asked Questions Related to Creation of Menus**

1) *Do all menu fields need to be available in the function where the menu is created?*

No. The user may create menus that are later assigned to dates, sites, or age/grade groups. The user may create cycles that are later assigned to calendars. The user may assign the nutrient standard when the nutrient analysis is calculated.

2) *May we include the Food Based Menu Planning (FBMP) contributions?*

Software programs may allow the user to add the FBMP contributions or carry forward to the menu the FBMP contributions entered for recipes or ingredients; however, the software program may not calculate the contribution of any menu item. FBMP functionality is not required for the approved software program and is not evaluated in the same manner. More information about the optional functionality for FBMP is found under the Food Based Menu Planning in the Optional Functions section of this document. .

## **Menu Reports**

### **Calendar Format**

*The program must create a report of all menu items being served in a calendar format. For example, the report would show the menus for June in a calendar format. This report should be suitable for sending home with students, posting in a cafeteria, or adding to a Web site.*

*The user must be able to specify the calendar report by site or school, grade/age, meal, cycle or day/date range.*

*This report must include Saturdays and Sundays, if specified by the user.*

#### **Additional Recommendations**

*Use a shorter, consumer-friendly name for menu items on this report. Examples would include using “Banana” instead of “Banana, medium, 6”-7”” or “Grandma’s Apple Cobbler” instead of “Apple Cobbler using canned apples and oatmeal topping”.*

*If a shorter menu name is not used, provide a system of truncating the description that shortens the description appropriately. Words should not be cut off mid-word. The shortened description or name should make sense.*

*Omit the serving size from the menu calendar report.*

*Allow the calendar report to include dates from more than one month. This would allow the user to create a calendar report that includes the full school week for weeks that span the end and beginning of two months.*

### **Report Format**

*The program must create a menu report listing the menu items to be served. The production report (described in the Menu Production Report section of this document) may meet this requirement. This report may include the serving size, planned number of servings, and feeding figure.*

*The user must be able to specify the report by site or school, grade/age, meal, cycle, or day/date range.*

## ***Menu Production Report***

*The program must create a Menu Production Report listing the menu offered along with the serving size, projected number of servings of each menu item and the total feeding figure (planned number of reimbursable meals). This report may also meet the requirement for the Menu Report, Report Format (described under Report Format in the Menu Reports section of this document). Sample formats for production reports can be found in the **Menu Planner for Healthy School Meals** (<http://teamnutrition.usda.gov/Resources/menuplanner.html>).*

## ***Missing Menu Items***

*The program must identify menu items or prevent the user from adding menu items which are not included in the software program's database. The software program must:*

- show an error message if the user tries to add a menu item that is not in the software program's food item or recipe database, OR*
- prevent the user from adding any items to menus that are not in the software program's food item or recipe database, OR*
- create an exception report that lists all items added to menus that are not in the software program's food item or recipe database.*

Additional Recommendations:

*Alert the user if food items with no nutrient data are added to the program's food item database or to a recipe as an ingredient.*

## **Frequently Asked Questions Related to Missing Menu Items**

- 1) *How do I mark missing nutrient data for food items or recipes added to menus that do not have nutrient data?*

If the software program allows the user to enter food items into the database that do not have nutrient data and allows the user to add these food items to menus (or allows the user to add foods not in the food item or recipe database to a menu), the program must mark the nutrient analysis to indicate that nutrient data is missing. If the nutrient data is missing for all nutrients for a menu item, the program must mark all the nutrients for that menu item and the nutrient totals for that menu as including missing data. The nutrient data must be marked on all displays and reports. Zeros may not be used to indicate missing nutrient data.

## ***Nutrient Standards***

The United States Department of Agriculture's (USDA) Food and Nutrition Service provides the nutrient standards which must be incorporated into the approved software program. Nutrient standards are set for calories and seven nutrients – protein, iron, calcium, vitamin A, saturated fat, total fat, and vitamin C. The nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The remaining nutrient standards are based on the Recommended Dietary Allowances (RDAs). The breakfast standards are based on 25% of the RDAs and the lunch standards are based on 33% of the RDAs.

Schools are required to plan menus that meet 100 percent of the nutrient standard for each of the specified key nutrients. School breakfasts and lunches are required to meet the respective nutrient standards for each age/grade group served when menu nutrient values are averaged over a week's time. Unless the optional method for combining breakfast and lunch analyses is used (see below), the nutrient standards for breakfast and lunch must not be averaged together. They must be based on the individual breakfast or lunch meals.

Optionally, breakfast and lunch nutrient analyses may be combined following the methodology provided by USDA. Combining breakfast and lunch nutrient values may mask nutrient deficiencies at either breakfast or lunch so it may be advantageous to complete the nutrient analyses individually as well as combined. State agencies may not combined breakfast and lunch menus during a School Meals Initiative for Healthy Children (SMI) review of Food Based Menu Planning schools. For information about the optional combined breakfast lunch nutrient analysis, including the required methodology for calculating the combined nutrient standard, refer to Combined Breakfast Lunch Analysis in the Optional Functions section of this document..

Nutrient standards have not been established for snacks or dinner (supper) meals.

## Single Age Nutrient Standards for Breakfast and Lunch

The software program must include the individual age (ages three to 17) nutrient standards for breakfast and lunch. The following nutrient standards must be included in the program for use as individual age/grade standards or for calculation of new age/grade groups.

### Single-age Nutrient Standards for Breakfast and Lunch

The following single-age breakfast and lunch nutrient standards are to be used to determine the nutrient standards for those schools whose age or grade groupings do not correlate with the modified age groupings created by USDA (see Modified Nutrient Standards below).

#### BREAKFAST RDAs (1/4)

	Calories	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (RE) (IU)		** Fat (g)	Vitamin C (mg)	**Sat Fat (g)
Age 3	325	4	200	2.5	100	500		10	
Age 4	450	6	200	2.5	125	625		11.25	
Age 5	450	6	200	2.5	125	625		11.25	
Age 6	450	6	200	2.5	125	625		11.25	
Age 7	500	7	200	2.5	175	875		11.25	
Age 8	500	7	200	2.5	175	875		11.25	
Age 9	500	7	200	2.5	175	875		11.25	
Age 10	500	7	200	2.5	175	875		11.25	
Age 11	588	11.4	300	3.4	225	1125		12.5	
Age 12	588	11.4	300	3.4	225	1125		12.5	
Age 13	588	11.4	300	3.4	225	1125		12.5	
Age 14	588	11.4	300	3.4	225	1125		12.5	
Age 15	650	13	300	3.4	225	1125		15	
Age 16	650	13	300	3.4	225	1125		15	
Age 17	650	13	300	3.4	225	1125		15	

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to** 30% of calories from fat. The nutrient standard for saturated fat is **less than** 10% of calories from saturated fat.

### LUNCH RDAs (1/3)

	Calories	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (RE) (IU)		** Fat (g)	Vitamin C (mg)	**Sat Fat (g)
Age 3	433	5.3	267	3.3	133	665		13.3	
Age 4	600	8	267	3.3	167	835		15	
Age 5	600	8	267	3.3	167	835		15	
Age 6	600	8	267	3.3	167	835		15	
Age 7	667	9.3	267	3.3	233	1165		15	
Age 8	667	9.3	267	3.3	233	1165		15	
Age 9	667	9.3	267	3.3	233	1165		15	
Age 10	667	9.3	267	3.3	233	1165		15	
Age 11	783	15.2	400	4.5	300	1500		16.7	
Age 12	783	15.2	400	4.5	300	1500		16.7	
Age 13	783	15.2	400	4.5	300	1500		16.7	
Age 14	783	15.2	400	4.5	300	1500		16.7	
Age 15	867	17.2	400	4.5	300	1500		20	
Age 16	867	17.2	400	4.5	300	1500		20	
Age 17	867	17.2	400	4.5	300	1500		20	

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to** 30% of calories from fat. The nutrient standard for saturated fat is **less than** 10% of calories from saturated fat.

*The software program must use the grades for ages provided by USDA. The software program must use the following ages for grades when using the nutrient standards to calculate nutrient standards for grade groups, such as grades 3-6.*

**Age/Grade Chart**

<u>GRADE</u>	<u>AGE</u>
KINDERGARTEN (K)	5 YEARS
FIRST GRADE (1)	6 YEARS
SECOND GRADE (2)	7 YEARS
THIRD GRADE (3)	8 YEARS
FOURTH GRADE (4)	9 YEARS
FIFTH GRADE (5)	10 YEARS
SIXTH GRADE (6)	11 YEARS
SEVENTH GRADE (7)	12 YEARS
EIGHTH GRADE (8)	13 YEARS
NINTH GRADE (9)	14 YEARS
TENTH GRADE (10)	15 YEARS
ELEVENTH GRADE (11)	16 YEARS
TWELFTH GRADE (12)	17 YEARS

## Modified Nutrient Standards (Age & Grade Groups) for Breakfast & Lunch

The software program must include the modified nutrient standards for breakfast and lunch for the specified age and grade groups, plus the nutrient standards for ages 51+. The nutrient standards are established by weighting and averaging the RDAs (except for fat and saturated fat) for four different groups of school-aged children. Nutrient standards are set for ages 3-6, 7-10, 11-13, and 14-17 years of age. Grade group standards were added in 1995 and must be included. A data set of nutrient standards for breakfast and lunch for adults 51+ years was added for schools who participate in the Child and Adult Care Food Program (CACFP). This data set must also be incorporated into approved software programs, so that local school districts that operate the CACFP program under Nutrient Standard Menu Planning (NSMP) will have the necessary data to analyze meals served to adults, in compliance with program regulations.

### Modified Nutrient Standards for Age Groups

#### BREAKFAST RDAs (1/4)

NUTRIENTS	Ages 3-6 years	Ages 7-10 years	Ages 11-13 years	Ages 14-17 years
Calories	419	500	588	625
Protein (g)	5.5	7	11.25	12.5
Calcium (mg)	200	200	300	300
Iron (mg)	2.5	2.5	3.4	3.4
Vitamin A (RE)	119	175	225	225
Vitamin A (IU)	595	875	1125	1125
** Fat (g)				
Vitamin C (mg)	11	11.25	12.5	14.4
** Saturated Fat (g)				

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

### LUNCH RDAs (1/3)

NUTRIENTS	Ages 3-6 years	Ages 7-10 years	Ages 11-13 years	Ages 14-17 years
Calories	558	667	783	846
Protein (g)	7.3	9.3	15	16.7
Calcium (mg)	267	267	400	400
Iron (mg)	3.3	3.3	4.5	4.5
Vitamin A (RE)	158	233	300	300
Vitamin A (IU)	790	1165	1500	1500
** Fat (g)				
Vitamin C (mg)	14.6	15	16.7	19.2
** Saturated Fat (g)				

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

### Modified Nutrient Standards for Grade Groups

#### Breakfast RDA (1/4)

Nutrients	K-12	7-12
CALORIES	554	618
PROTEIN (g)	10	12
IRON (mg)	3	3.4
CALCIUM (mg)	257	300
VITAMIN A (RE)	197	225
VITAMIN C (mg)	13	14

\*\*FAT (g)

\*\*SATURATED FAT (g)

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

### LUNCH RDA (1/3)

Nutrients	K-6	7-12	K-3
CALORIES	664	825	633
PROTEIN (g)	10	16	9
IRON (mg)	3.5	4.5	3.3
CALCIUM (mg)	286	400	267
VITAMIN A (RE)	224	300	200
VITAMIN C (mg)	15	18	15

\*\*FAT (g)

\*\*SATURATED FAT (g)

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

### Modified Nutrient Standard for Age 51+

#### Breakfast and Lunch Nutrient Standards for Age 51+

BREAKFAST (1/4 RDA)	LUNCH (1/3 RDA)
484 CALORIES	644 CALORIES
14 GRAMS PROTEIN	19 GRAMS PROTEIN
200 MG CALCIUM	266 MG CALCIUM
2.5 MG IRON	3.3 MG IRON
225 RE VITAMIN A	266 RE VITAMIN A
15 MG VITAMIN C	20 MG VITAMIN C
**FAT	**FAT
**SATURATED FAT	**SATURATED FAT

\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

Additional Recommendations:

*Allow the user to enter standards for nutrients that do not have a corresponding USDA nutrient standard, such as cholesterol and fiber. Since some states have set nutrient standards for nutrients for which there is no standard required by USDA, the user should be able to add these standards to the software program. The software program may allow the user to add these standards to the USDA provided standard or copy and edit the USDA standard to include the state's nutrient standards. If the user is allowed to add these standards to the USDA standard, it must be clear that this standard is not required by USDA. The field or standard can be marked with a code or symbol that is defined in a key OR these user-added standards can be provided in a separate section that is clearly marked as including standards not provided nor required by USDA.*

*Include the optional nutrient standards for specific grade and age ranges. These age and grade ranges were published in the Code of Federal Regulations as choices for the National School Lunch Program and School Breakfast Program, but were not part of the original specifications and requirements for approved software programs. Software developers may choose to provide these additional nutrient standards to their users.*

**Additional Age/Grade Group Nutrient Standards - Optional for Approved Software Programs**

**Chart 1. Nutrient Standards for Breakfast – By Grade**

<b>Nutrients</b>	<b>Preschool</b>
CALORIES	388
PROTEIN (g)	5
IRON (mg)	2.5
CALCIUM (mg)	200
VITAMIN A (RE)	113
VITAMIN C (mg)	11
**FAT (g)	
**SATURATED FAT (g)	

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\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

**Chart 2. Nutrient Standards for Breakfast – By Age**

<b>Nutrients</b>	<b>Age 2</b>	<b>Ages 3, 4, 5</b>
CALORIES	325	388
PROTEIN (g)	4	5
IRON (mg)	2.5	2.5
CALCIUM (mg)	200	200
VITAMIN A (RE)	100	113
VITAMIN C (mg)	10	11

\*\*FAT (g)

\*\*SATURATED FAT (g)

**Chart 3. Nutrient Standards for Lunch – By Grade**

<b>Nutrients</b>	<b>Preschool</b>	<b>Grades 4-12</b>
CALORIES	517	785
PROTEIN (g)	7	15
IRON (mg)	3.3	4.2
CALCIUM (mg)	267	370
VITAMIN A (RE)	150	285
VITAMIN C (mg)	14	17

\*\*FAT (g)

\*\*SATURATED FAT (g)

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\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

#### Chart 4. Nutrient Standards for Lunch – By Age

Nutrients	Ages 3-4 (Preschool)
CALORIES	517
PROTEIN (g)	7
IRON (mg)	3.3
CALCIUM (mg)	267
VITAMIN A (RE)	150
VITAMIN C (mg)	14
**FAT (g)	
**SATURATED FAT (g)	

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\*\* There are no RDAs for fat or saturated fat. Nutrient standards for fat and saturated fat are based upon the 1995 *Dietary Guidelines for Americans*. The nutrient standard for fat is **less than or equal to 30%** of calories from fat. The nutrient standard for saturated fat is **less than 10%** of calories from saturated fat.

### Calculation of Nutrient Standards for New Age or Grade Groups

*The software program must create a new nutrient standard for the age or grade group specified by the user. The software program must automatically calculate the nutrient values based on the Single-age Nutrient Standards for Breakfast and Lunch (shown above under Single Age Nutrient Standards) for the age or grade range entered by the user. Since not all school districts are divided into the age groups of 3-6, 7-10, 11-13, or 14-17; this allows schools in which the age or grade groups differ from the established standard age/grade groups to create new nutrient standards that correlate with the age/grade groups in their school district. This would allow the nutrient standards to more accurately target the nutrient requirements of the age/grade group served.*

## Methodology for Calculating Nutrient Standard for Age/Grade Groups

The calculation of a new nutrient standard should be based on the following methodology:

### Calculation Method –

1. The user will select the single ages/grades that correspond with the school districts cluster of age/grade groups. (The age/grade groups which are clustered together are typically served the same menu and portion size.) This can be done, for example, by entering the age/grade at each end of the range or highlighting the choices for each age group.
2. The computer will add the nutrient standards for each age/grade group and divide by the number of age/grade groups selected to create a new nutrient standard for the new average age/grade group.
3. The process is completed for breakfast or lunch, as specified by the user.
4. These newly created nutrient standards can now be used to compare the nutrient analysis of the menus to the nutrient standard.

For example, a school district divides its age groups as follows: 3-4, 5-7, 8-12, and 13-17. The nutrient standard for Breakfast for ages 5-7 would be calculated as follows:

	Calories	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (RE) (IU)		Fat (g)	Vitamin C (mg)	Sat Fat (g)
Age 5	450	6	200	2.5	125	625		11.25	
Age 6	450	6	200	2.5	125	625		11.25	
Age 7	500	7	200	2.5	175	875		11.25	

Add Nutrients: 1400    19                    600                    7.5                    425    2125    33.70

Divide by the  
number of age  
groups  
selected (3)

467    6.3                    200                    2.5                    142    708    11.25

Based on the methodology, the software program would calculate the new nutrient standard for this age group for breakfast as:

Age 5-7

Calories	467
Protein	6.3
Calcium (mg)	200
Iron (mg)	2.5
Vitamin A (RE)	142
Vitamin A (IU)	708
Vitamin C (mg)	11.25

*The software program must save the new grade or age group nutrient standards created by the user.*

### **Editing Nutrient Standards**

*The user must not be able to edit the nutrient standards provided by USDA. The user must not be able to change the values for the nutrient standards provided by USDA.*

*The user must not be able to edit the nutrient standards created from USDA-provided nutrient standards. The user must not be able to change the nutrient values.*

### **Deletion of Nutrient Standards**

*The user must not be able to delete or remove the USDA provided standards from the software program. The required nutrient standards provided by USDA for single-age and age/grade groups must remain in the program and may not be deleted by the user or software developer.*

*The user must be able to remove or delete any user-created nutrient standards for age or grade groups. If the user creates new age or grade groups from the USDA-provided standards, the user must be able to remove these nutrient standards.*

*The user must be able to remove or delete any user-added nutrient standards. If the user adds nutrient standards that are not provided by USDA (e.g., for nutrients not monitored by USDA), the user must be able to delete these nutrient standards.*

## **Nutrient Standard Report**

*The Nutrient Standard Report must summarize the single-age nutrient standards and modified nutrient standards for each age/grade group for breakfast and lunch.*

*The Nutrient Standard Report must include the nutrient standards for the age/grade groups created or added by the user.*

*The user must be able to specify the nutrient standards to be included on the nutrient standard report, including multiple nutrient standards or all the nutrient standards, if desired.*

Additional Recommendations:

*Include text that states that the percent of the RDA to be met is  $\frac{1}{4}$  of the RDA for breakfast and  $\frac{1}{3}$  of the RDA for lunch.*

## **Frequently Asked Questions Related to the Nutrient Standards**

- 1) *Instead of providing the nutrient standards for the age/grade groups, may we calculate these groups as they are requested by the user in the software program?*

No. The nutrient standards for age/grade ranges provided by USDA must appear in the software program as they appear in the specifications. Nutrient standards calculated by the software program from the single age nutrient standards for the same age/grade ranges will result in slightly different values for some of the nutrients. If the age/grade range is provided by USDA, the standards as provided in the specifications document, not calculated, must be used because these are the nutrient standards in the regulations.

- 2) *What if the user attempts to create a nutrient standard from single age nutrient standards for an age or grade group standard provided by USDA?*

If the user specifies an age/grade group provided by USDA, the software program must provide the values for the nutrients as shown in the specifications document. The program may not calculate these age/grade ranges from the single age standards. The developer may block the creation of age/grade groups that are the same as the modified nutrient standard groups.

- 3) *Why are the nutrient standards for vitamin A still shown in RE?*

Currently, the regulatory nutrient standards for vitamin A for Nutrient Standard Menu Planning (NSMP) are in RE. Most of the standards also have a value for vitamin A in IU. The nutrient standards for vitamin A for NSMP have not yet been updated to reflect the use of RAE (retinol activity equivalent). Vitamin A in RE is included in the Child Nutrition Database (CN-D), but may not be available from other sources, such as the USDA National Nutrient Database for Standard Reference. The developer may add or allow the user to

add data for vitamin A in RAE. However, the developer must mark this as a nutrient that is not required by USDA. Also, RE and RAE may not be combined in one field. USDA expects the nutrient standards for NSMP for vitamin A to change from RE to RAE in the future and will change the software requirements accordingly at that time.

- 4) *Why are some of the nutrient standards required in the regulations optional in the approved software?*

The evaluators discovered that some of the nutrient standards in the regulations were not included in the original software specifications or requirements. We do not know the reason. However, we have added these nutrient standards as optional for the software developers to include and strongly recommend that they are included.

- 5) *May we add standards required by the State, such as a requirement for sodium?*

Yes. The software program may allow the user to enter nutrient standards for USDA-required nutrients that do not have a nutrient standard. It must be clear to the user that these nutrient standards are not required by USDA.

- 6) *May we add nutrient standards for nutrients that are not required by USDA, such as vitamin D?*

Yes. The developer may add or allow the user to add nutrient standards for nutrients not required by USDA, as long these are clearly marked as user-added or not required by USDA. However, we recommend that the developers do not add standards for nutrients not required (or optional) by USDA, even if this nutrient is provided in the program's database. Data will not be complete for nutrients not provided in the CN-D. Providing a nutrient standard for nutrients for which there is incomplete data and comparing the nutrient analysis to this standard when the data is not complete may result in an inappropriate or inaccurate interpretation of the nutrient analysis.

- 7) *May we add Food Based Menu Planning (FBMP) standards to our software program?*

The nutrient standards for age/grade groups under FBMP option are included in the required and optional nutrient standards. The required meal pattern contributions from the food groups are not included in the requirements for the approved software programs. The approved software programs are intended for use with NSMP and the nutrient analysis of NSMP menus. While it is not the intent of the approved software to be used to evaluate the requirements for meal pattern contributions for FBMP, the option for the user to enter meal pattern contributions may be included in the program. Please refer to Food Based Menu Planning Functions in the Optional Functions section of this document for more information about the optional FBMP functionality.

## ***Weighted Nutrient Analysis***

Nutrient Standard Menu Planning (NSMP) requires an accurate nutrient analysis. In order to accurately analyze the nutritional composition of meals offered in the National School Lunch Program and School Breakfast Program, the nutritional analysis of the planned reimbursable menu must be based on weighted averages. When a selective menu is planned (with more than one food choice), some food items are more popular than others; therefore, appropriate weighting should be given to the most popular food item. A menu item which is chosen frequently will contribute more nutrients to the meal than a menu item seldom chosen. Simply averaging all menu items and giving equal weight to each will not result in an accurate nutritional analysis. The calculation method for computing a weighted nutrient analysis will require the school district to enter the menu item, portion size, projected servings of each menu item, and the total feeding figure (projected number of reimbursable meals that will be served at each meal). The weighted nutrient analysis methodology allows for the implementation of Offer-vs.-Serve. More information about Offer vs. Serve can be found on the Team Nutrition Web site ([http://teammnutrition.usda.gov/Resources/offer\\_v\\_serve.html](http://teammnutrition.usda.gov/Resources/offer_v_serve.html))

### **Weighted Nutrient Analysis of Menus**

*The software program must calculate the weighted nutrient analysis of menus.*

*The software program must calculate the average nutrient composition of a menu for one meal, such as lunch, for one day. The methodology for weighted nutrient analysis is shown below.*

*The software program must calculate the average nutrient composition of the multiple menus for one meal, such as lunch, for a user-specified group or range of days, such as a cycle, week, or date range. The methodology for weighted nutrient analysis is shown below.*

*The software program must compute the percent of calories from protein, carbohydrate, fat, and saturated fat for a menu for one meal and for the user-specified group or range of multiple menus for the same meal, such as breakfast. The methods for calculating the daily and weekly percentages of calories from protein, carbohydrate, fat and saturated fat are outlined below:*

*Menus must be analyzed for calories, fat, protein, carbohydrate, saturated fat, cholesterol, iron, calcium, sodium, fiber, vitamin A, and vitamin C.*

*Only foods offered as reimbursable meals may be included in the nutrient analysis of the menus. The projected servings and total feeding figure must not include a la carte or adult sales; therefore, separate fields should be established to handle a la carte and adult sales and production data.*

*The program must use the following methodology to calculate the weighted nutrient analysis. The user will enter the menu item, portion size, projected servings of each menu item and the total feeding figure. The software program must then calculate the weighted nutrient analysis using the following method.*

### **Calculation Methods for Weighted Nutrient Analysis**

**Do not round daily nutrient values when calculating the weekly average (or average nutrient values for multiple menus). Round nutrient values after calculations are complete.**

#### **Calculation Method for Weighted Nutrient Values for Single Menus**

1. Multiply the nutrient values for a menu item by the projected number of servings for that menu item to calculate the nutrients provided by that menu item. Repeat for each menu item for the specified meal.
2. Total all the nutrients of the meal. Add the individual nutrient values from each ingredient to yield the total nutrient values of the meal for each nutrient (protein, vitamin C, etc.)
3. Divide the total nutrients for the meal by the total feeding figure to get the weighted nutrient values for that meal.

#### **Calculation Method for the Percent of Calories from the Macronutrients (Protein, Carbohydrate, Total Fat, and Saturated Fat).**

The percentage of calories from protein, carbohydrate, total fat, and saturated fat for the meal should be calculated as follows:

1. Identify the total calories and total grams of protein, total fat, saturated fat and carbohydrate from the weighted nutrient values for the meal.
2. Use the following “calories per gram” value for protein, fat, saturated fat, and carbohydrate:
  - i. Protein = 4 calories per gram
  - ii. Carbohydrate = 4 calories per gram
  - iii. Fat = 9 calories per gram
  - iv. Saturated Fat = 9 calories per gram
3. Multiply the total grams of protein by four and divide by the total calories. This total equals the percentage of calories from protein.
4. Multiply the total grams of carbohydrate by four and divide by the total calories. This total equals the percentage of calories from carbohydrate.

5. Multiply the total grams of fat by nine and divide by the total calories. This total equals the percentage of calories from fat.
6. Multiply the total grams of saturated fat by nine and divide by the total calories. This total equals the percentage of calories from saturated fat.

Note: The total of the three percentages (protein, carbohydrate, and fat) should approximate but may not equal 100%.

#### Calculation Method for the Weekly Average (or Average Nutrient Values for Multiple Menus)

1. Complete these calculations for each meal in the group of menus (one week or other range of menus, such as menu cycle or range of dates).
2. Add together the weighted nutrient values for each nutrient for each meal in the group of menus, e.g., day 1, day 2, day 3, day 4, day 5, and so forth.
3. Divide the total nutrient values for each nutrient by the number of days included in the group of menus, such as five days for a Monday through Friday menu, to get the average weighted nutrient analysis for the group of menus.

#### Calculation Method for Average Percent of Macronutrients for the Week (or Average of Multiple Menus)

1. The percentage of calories from protein, carbohydrate, total fat and saturated fat based on the week (or group of menus) should be calculated as follows:
2. Take the calories and total grams of protein, total fat, carbohydrate and saturated fat from step 7 above (average weighted nutrient analysis for the group of menus).
3. Multiply the total grams of protein by four and divide by the total calories. This total equals the percentage of calories from protein.
4. Multiply the total grams of carbohydrate by four and divide by the total calories. This total equals the percentage of calories from carbohydrate.
5. Multiply the total grams of fat by nine and divide by the total calories. This total equals the percentage of calories from fat.
6. Multiply the total grams of saturated fat by nine and divide by the total calories. This total equals the percentage of calories from saturated fat.

Note: The total of the three percentages (protein, carbohydrate, and fat) should approximate but may not equal 100%.”

*If the program includes the optional combined breakfast lunch analysis, the methodology will be checked using the instructions provided by FNS. See Optional Functions section of this document..*

*If the program includes an optional simple averaging function in which the developer automatically inputs the feeding figure and number of servings of each menu item, this will to be checked for accuracy by the software evaluators. See the Optional Functions section of this document.*

*If the program provides the optional Food Based Menu Planning (FBMP) components, the program must follow the requirements listed in the Optional Functions section of this document.*

### **Menu Weighted Nutrient Analysis Report [single menu analysis]**

*The software program must create a report of the individual menu's weighted nutrient analysis. The Menu Weighted Nutrient Analysis Report summarizes the calculated nutritional value of an individual menu and compares it to the selected nutrient standard.*

This report must show the:

- Total amount of each nutrient provided by the menu
- Nutrient standard for each nutrient for the age/grade group served.
- percentage of nutrient standard met for the specified meal and age (or grade) group, and
- discrepancy from standard (the difference between the nutrient standard and the menu's actual nutrient value).

For nutrients for which there is no nutrient standard, e.g., fiber or sodium, only the total amount of the nutrient must be shown.

*The software program must mark the meals that do not meet the nutrient standards and specify which nutrients are deficient. The menu's nutrient analysis can be marked by using special marks (such as an asterisk) or highlighting the data on the Menu Weighted Nutrient Analysis Report. The developer may choose to print an additional Exception Report that lists the menus that do not meet the nutrient standard, along with the nutrients that do not meet the standard.*

*The system for marking meals that do not meet the nutrient standards must be defined in a key or legend on the report and displays where the analysis is shown.*

*Missing nutrient values, including nutrient totals that include missing values, must be marked on all nutrient analysis reports and displays. Zeros may not be used to indicate missing nutrient values.*

*The system for marking missing nutrient values must be defined in a key or legend on the report and displays where the analysis is shown.*

## **Multiple Menu Weighted Nutrient Analysis Report [average for a group of menus, such as one week]**

*The software program must create a report of the weighted nutrient analysis for a user-specified group of menus. The Multiple Menu Weighted Nutrient Analysis Report summarizes the calculated nutritional value of a group of menus and compares it to the selected nutrient standard.*

This report must show the:

- average of each nutrient provided by the menus
- nutrient standard for the age/grade groups served
- percentage of nutrient standard met for the specified meal and age group, and
- discrepancy from standard (the difference between the nutrient standard and the average nutrient value for the group of menus).

For nutrients for which there is no nutrient standard, only the total amount of the nutrient must be shown.

*The software must mark the menus that do not meet the nutrient standards and specify which nutrients are deficient. The menu's analysis can be marked by using special marks (such as an asterisk) near or highlighting the data on the Multiple Menu Weighted Nutrient Analysis Report. The software developer may choose to print an additional Exception Report that lists the menus for meals that do not meet the nutrient standard, along with the nutrients that do not meet the standard.*

*The system for marking meals that do not meet the nutrient standards must be defined in a key or legend on the report and displays where the analysis is shown.*

*Missing nutrient values, including nutrient totals that include missing values, must be marked on all nutrient analysis reports and displays.*

*The system for marking missing nutrient values must be defined in a key or legend on the report and displays where the analysis is shown.*

*The software program may combine the Menu Weighted Nutrient Analysis Report and Multiple Menu Weighted Nutrient Analysis Report into one report, as long as the user can view nutrient values for both the individual menus and the average for the group of menus.*

## **Marking Menus That Do Not Meet Nutrient Standards**

*The software program must highlight or mark menus that do not meet the nutrient standard. The menus that do not meet the standard can be marked on the Menu Weighted Nutrient Analysis Report and Multiple Menu Weighted Nutrient Analysis Report OR displayed in a separate Exception Report. It may be sufficient to mark the nutrients that do not meet the standard for each menu's nutrient analysis and the average nutrient analysis for a group of menus.*

*The software program must mark the nutrients for that do not meet the nutrient standards for each analysis (individual meal's menu or the average of a group of menus) OR list the nutrients that do not meet the standard on the exception report.*

## **Frequently Asked Questions about the Weighted Nutrient Analysis**

1) *Does the program need to show the weighted nutrient analysis of each menu item?*

No. The software program does not have to show the weighted nutrient analysis of each individual menu item. The developer may choose to include this function to help the user identify foods that are low or high in a nutrient. It also can help the user find errors in the nutrient analysis.

2) *How many decimal places must we show for nutrient values in the weighted nutrient analysis?*

For the weighted nutrient analyses, the displays and reports must show at least the number of decimal places shown for the nutrient standard for that nutrient. Use the highest number of decimal places shown for the nutrient standard. For example, if one nutrient standard is 15.25 and another is 13.3, round to two decimal places (hundredths). Preferably show no more than three decimal places (thousandths) for any nutrient values since the Child Nutrition Database shows a maximum of three decimal places and requirement for user-entered ingredients is three decimal places.

3) *Is it sufficient to mark the missing value of an ingredient in a recipe or individual menu item?*

No. The missing value must be carried forward through the software program and marked accordingly. The nutrient analysis for any recipe that includes an ingredient that is missing nutrient data must have totals that include the missing values marked as such. Similarly, any menu that includes menu items that are missing nutrient

data must have the totals that include missing values marked accordingly. Because missing data can greatly affect the interpretation of the nutrient analysis, missing values and totals that include them must be marked.

4) *How do I mark missing values for food items that are missing a nutrient analysis?*

If the software program allows users to add food items that are missing their nutrient analyses, the nutrient analyses for these food items must show all nutrients as missing values. The software program's system for marking missing values must be used for all of the nutrients. The analysis for any recipe or menu that includes this food item as an ingredient or menu item must have the totals for all nutrients marked as including missing nutrient data.

5) *Could you provide examples of the weighted analysis calculations?*

These examples calculate the weighted nutrient analysis using the required methodology.

**Example Menu:** Feeding Figure (total number served) = 600

<u>CND#</u>	<u>Menu Item</u>	<u>Serving Size</u>	<u>Number of Servings</u>
50331	Vegetable Pizza	1 piece	450
50148	Toasted Cheese Sandwich	1 sandwich	150
9003	Apple	1 medium	350
9252	Pear	1 medium	250
1079	Low fat milk	1 cup	400
1085	Non fat milk	1 cup	200

**Example of Calculating the Weighted Analysis for a Nutrient Using Carbohydrate:**

<u>Menu Item</u>	<u>Carbohydrate/serving</u>	×	<u>Number of servings</u>	=	<u>Total for item</u>
Vegetable Pizza	34.07	×	450	=	15,331.50
Toasted Cheese Sandwich	16.00	×	150	=	2,400.00
Apple	25.13	×	350	=	8,795.50
Pear	27.52	×	250	=	6,880.00
Low fat milk	11.42	×	400	=	4,568.00
Non fat milk	12.15	×	200	=	<u>2,430.00</u>
					40,405.00

Total carbohydrate for menu = 40,405 grams

Divide by feeding figure =  $40,405 \text{ grams} \div 600 = 67.341667$

Weighted carbohydrate total for this menu = 67.341667 or **67.342** grams

**Example of Calculating the Weighted Analysis for a Nutrient Using Calories:**

<u>Menu Item</u>	<u>Nutrient Value per serving</u> ×		<u>Number of servings</u>	=	<u>Total for item</u>
Vegetable Pizza	264.99	×	450	=	119,245.50
Toasted Cheese Sandwich	228.99	×	150	=	34,348.50
Apple	94.64	×	350	=	33,124.00
Pear	103.24	×	250	=	25,810.00
Low fat milk	122.00	×	400	=	48,800.00
Non fat milk	83.3	×	200	=	<u>16,660.00</u>
					27,7988.00

Total calories for menu = 277,988 calories

Divide by feeding figure =  $277,988 \div 600 = 463.31333$

Weighted calorie total for this menu = 463.31333 or **463.313** calories

**Example of Calculating Percent of Calories from Carbohydrate**

For the calculation of the percent of calories from a macronutrient, the following example uses carbohydrates.

The weighted carbohydrate total from the example menu is 67.342 grams.

Multiply this gram amount times 4 calories per gram. This is the estimated amount of calories provided per gram of carbohydrate (for fat use 9 kcals/gram and for protein use 4 kcals/gram)

$67.342 \text{ grams} \times 4 \text{ kcal/gram} = 269.368 \text{ calories from carbohydrate}$

Divide the calories from carbohydrate by the total weighted calories for the menu.

$269.368 \div 463.313 = .5813953$

Multiply times 100.

$.5813953 \times 100 = 58.13953 \text{ or } 58.14$

The percent of calories from carbohydrate = 58.14%

### **Example of Calculating the Average Weighted Nutrient Value Using Carbohydrate:**

The example group of menus includes five menus to be averaged for the nutrient analysis. The weighted carbohydrate values are:

Day 1 = 67.342 grams

Day 2 = 75.45 grams

Day 3 = 54.78 grams

Day 4 = 63.426 grams

Day 5 = 71.32 grams

Add the value for each day:  $67.342 + 75.45 + 54.78 + 63.426 + 71.32 = 332.318$  grams

Divide by the number of menus in the group, in this case five:  
 $332.318 \text{ grams} \div 5 = 66.4636$  grams

Weighted carbohydrate amount for the range of menus = 66.464 grams

### **Example of Calculating the Average Weighted Nutrient Value using Calories:**

The example group of menus includes five menus to be averaged for the nutrient analysis. The weighted calorie values are:

Day 1 = 463.313 calories

Day 2 = 512.345 calories

Day 3 = 425.453 calories

Day 4 = 454.32 calories

Day 5 = 403.65 calories

| Add the value for each day:

$463.31 + 512.345 + 425.453 + 454.32 + 403.65 = 2259.081$  calories

Divide by the number of menus in the group, in this case five:  $2259.078 \div 5 = 451.8162$

Weighted calorie amount for the range of menus = 451.816 calories

**Example of Calculating the Average Weighted Percent of Calories from Carbohydrate) for a Group of Menus:**

For the calculation of the average percent of calories from a macronutrient, the following example uses carbohydrate.

Add the total grams of carbohydrate for each menu in the group of menus:

$$67.342 + 75.45 + 54.78 + 63.426 + 71.32 = 332.318 \text{ grams}$$

Add the total calories for each menu in the group of menus:

$$463.313 + 512.345 + 425.453 + 454.32 + 403.65 = 2259.081 \text{ calories}$$

Calculate the number of calories contributed by the macronutrient by multiplying the calories per gram of macronutrient times the total calories. In this example, calculate the number of calories contributed by carbohydrate by multiplying the grams of carbohydrate times four:

$$332.318 \text{ grams CHO} \times 4 \text{ calories per gram} = 1329.272 \text{ calories from carbohydrate}$$

Divide the calories provided by the macronutrient (in this example, carbohydrate) by the total calories:

$$1329.272 \div 2259.081 = .5884127$$

Multiply times 100 to obtain the percent of calories from carbohydrate for the group of menus:

$$.5884127 \times 100 = 58.84127\%$$

The percent of calories from carbohydrate (average for the group of five menus) = 58.841%

## **Required Nutrients**

*The following nutrients are required by the U.S. Department of Agriculture (USDA) and must be included in the approved software programs on all nutrient analyses reports and displays: vitamin A, vitamin C, iron, calcium, fat, cholesterol, saturated fat, sodium, fiber, calories, protein, and carbohydrate. Moisture (water), ash, and trans fat are provided in the Child Nutrition Database (CN-D), but are optional nutrients and do not need to be included on nutrient analysis reports and displays.*

*For recipes and menus, the software program must calculate the percentage of calories from fat, protein, carbohydrate, and saturated fat.*

*The user must be able to enter vitamin A values in both retinol equivalents (RE) and International Units (IU). Vitamin A may be displayed on nutrient analysis reports as RE or IU (including both units is preferred; if only one is included, RE is preferred).*

*The user must be able to enter ash and moisture for user-added food items. It is optional to show ash, moisture, and trans fat on the nutrient analysis displays and reports.*

*Nutrients not required by USDA in the approved software program must be shown in a separate section or marked accordingly.*

*The method of marking nutrients not required by USDA must be defined in a key or legend. If the nutrients required by USDA are not provided in a separate section, they must be marked with a code or symbol. If these nutrients are provided in a separate section, it must be labeled as such to make it clear to the user that these nutrients are not required by USDA.*

*The optional nutrients from the CN-D, ash, water, and trans fat, should be shown as provided by USDA. Currently, ash, moisture, and trans fat are optional nutrients included in the CN-D. These nutrients do not have to be marked or moved to a separate section.*

## **Frequently Asked Questions about the Required Nutrients**

### *1) May we include sugars as a nutrient?*

USDA recommends that software developers do not include sugars in the software programs at this time because sugars are not included in the CN-D. While sugars are included on the food label, this value includes both natural and added sugars. Because of the lack of data for sugars, it is recommended that the developers do not include it as a nutrient at this time.

2) *Why is vitamin A not provided in RAEs? May we include RAE values?*

Retinol activity equivalent (RAE) values may be included; however, they are not required by Nutrient Standard Menu Planning at this time and should not be included with the required nutrients. There may be a significant number of missing values for RAE at this time because it is not required on the food label. It is expected that the currently required RE unit for vitamin A will be replaced by RAE in the future.

## ***Nutrient Food Source List***

*The software program must provide a Nutrient Food Source List report that provides a summary of the food items that fall within a user-specified range for user-specified nutrients. This function is to be used in menu planning or to adjust menus that were found to be deficient through nutrient analysis. The intent of this function is to allow the user to search the Child Nutrition Database (CN-D) for food items that meet certain nutrient criteria so that they can adjust the menus with food items that will improve the menus and meet the nutrient standards. This function may search for recipes, menu items, ingredients, local food items, or CN-D food items that meet the specified nutrient criteria.*

*Each food item or recipe must be listed with the serving size and nutrients per serving for the specified nutrients. Use of “nutrients per 100 grams” is acceptable, but not as useful to the menu planner.*

*The software program must be able to search for ingredients or recipes that meet user-specified criteria for up to five nutrients at one time.*

*The user must be able to search for ingredients or recipes that meet nutrient criteria for each of the required nutrients.*

*The user must be able to at least specify “less than”, “equal to”, and “more than” a nutrient value for each nutrient.*

### **Additional Recommendations:**

*Allow the user to search for both food items from the CN-D and local food items that meet certain nutrient criteria. The user may need to add foods to a menu that are not currently made into a recipe or menu item in order to meet nutrient criteria. If the user can search the CN-D and the local food items for food items that meet certain nutrient criteria, the user will have more flexibility with menu planning and will be able to better identify foods containing certain nutrients. The user should not be limited by the subset of foods in the recipe or menu item database. The nutrient searches for food items from the CN-D and local food items may be separate functions.*

*Allow the user to enter a percent of calories for saturated fat, fat, protein, and carbohydrate. While not required, it may be easier for users to identify food items high or low in these macronutrients with a percent rather than an actual value.*

*Add the ability to choose additional options for entering a lower or upper limit. It is helpful to include options, such as “less than or equal to”, “greater than or equal to” and so forth.*

## **Technical Support and Help**

*Basic technical support and help must be available to the user. This can be accomplished through the use of help options within the program, help available on a developer’s Web site, video, manuals, or other help that is immediately available to the user.*

*The help provided to the user must reflect accurate information about Nutrient Standard Menu Planning, other School Meal Initiative for Healthy Children requirements, the Software Evaluation Project, and approved software programs. User manuals, training programs, and other support methods must support the programs but not try to interpret policy from the U.S. Department of Agriculture’s Food and Nutrition Service.*

Additional Recommendations:

Use the materials and resources listed in Appendix B of this document as support materials when developing technical support for the approved software program. Refer your users to these materials and resources, too.

## **Technical Requirements**

*The program must use software and hardware technology that is commercially available.*

*The required operating system must be commercially available.*

*The developer must provide the program to the user in a format that is easy to install or install the program for the user. The developer should not expect the software user to be well versed in computer technology or secondary programs, such as SQL server, MS Access, and so forth.*

*The software program must have minimal errors and problems that interfere with the use of the software program.*

*The program must be easy to learn and logically set up.*

*The response and turnaround time for displays and reports must be reasonable based upon today’s standards.*

*The Child Nutrition Database (CN-D) must be the primary database in the approved software program.*

*The program must use appropriate search functions to allow the user to search for CN-D food items, local food items, recipes, and menus. At a minimum, the program must allow the user to search by name (or description) and ID number (CND#, recipe number, and so forth).*

*The program should allow the user to save all data. The user should be prompted to save data when data will be lost.*

*The user must be able to display or print all reports.*

*The software developer must have a system in place for backing up and restoring the user's data. This may be part of the software program or a service provided by the developer.*

Additional Recommendations:

Plan a system of updating the program as technology changes, such as operating systems, web, software and hardware.

Provide a report that lists food items currently used in menus or recipes that has been changed to the status of discontinued ("d") or removed from the CN-D.

Allow the user to be able to display and print all reports at the discretion of the user. *It is recommended that reports display before printing.* The user should be able to select additional print options (partial, category, or range) before printing the report because many reports may not need to be printed in their entirety. The user should be able to choose to print any reports.

Provide the option for the user to save any report or export to common word processing or database software, as needed.

Provide the user with more flexibility for searching for food items and recipes.

Allow the user to search the entire string for matches, such as searching the entire full description of a food item, instead of only the first word. It is also acceptable to allow the user to select from broader or narrower search options.

Provide the capability to limit all searches to category. This often will help the user by limiting the number of items in the search results and providing hits that are related to the desired item. But, since users do not categorize foods the same way, we recommend that the developers do not require the user to search by category for all searches.

Confirm with a message that the user wants to delete before actually deleting. A simple message to confirm deletion of data can prevent accidental deletion of data.

Establish rounding rules for the software program, so that rounding of nutrient values is consistent throughout the program.

## ***Optional Functions***

The following functions or features are optional and considered “added value” functionality by the U.S. Department of Agriculture (USDA). Since these functions involve nutrient analysis, comparison to nutrient standards, or a Child Nutrition Program (CNP) menu planning option, these functions must be checked if they are added to the approved software program.

### **USDA Recipes**

Inclusion of the *USDA Recipes for Schools*, produced by USDA, as production recipes for use by schools participating in the CNP, is **not** required. If these recipes are added to the software program by the developer, they will be checked. The software evaluators will check a subset of the USDA recipes with each evaluation. In this section recipes from the *USDA Recipes for Schools* are referred to as “USDA recipes”.

The *USDA Recipes for Schools* can be obtained in pdf format from the Team Nutrition (TN) or National Food Service Management Institute (NSFMI) Web sites (TN – [http://www.fns.usda.gov/tn/Resources/usda\\_recipes.html](http://www.fns.usda.gov/tn/Resources/usda_recipes.html) or NSFMI - <http://www.nfsmi.org/ResourceOverview.aspx?ID=115>

Old, outdated USDA production (or quantity) recipes, such as the 1988 *Quantity Recipes for School Food Service* and 1995 *Tool Kit for Healthy School Meals* may not be included in the software program.

*The source of the USDA recipes must be listed as “local” or “developer-added”.* Use of a company name or abbreviation is permitted. The source may not include USDA unless it is clear that it is developer-added, such as “developer-added USDA recipe”.

*The USDA recipes must be locked.* The original copy of the recipe, as entered from the USDA recipe by the software developer must be maintained in the program. The user may not have the capability to edit the original copy of the USDA recipe, as entered by the developer.

*The user must be able to copy a USDA recipe.*

*The user must be able to rename and save the copied recipe.*

*The user must be able to edit the copied recipe.*

*Copies of the USDA recipes must have the source tag of “local” or “user\_added”.*

*The USDA recipe number (such as B-02) must be included.*

*The nutrient analysis of the recipe must be calculated from “as consumed” ingredients and amounts. The recipe may be: 1) linked to the corresponding nutrient analysis of the recipe as a food item in the Child Nutrition Database (CN-D) or 2) entered using the Yield Factor Method (YFM) (with “as consumed” ingredients and amounts). The developer may allow the user to enter both a raw and “as consumed” ingredient with only the “as consumed” being used for the nutrient analysis. For more information about the nutrient analysis of recipes, refer to the documents **Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI** (<http://healthymeals.nal.usda.gov/software-support.html>) and **Nutrient Analysis Protocols: How to Analyze Menus for USDA's School Meals Programs** (<http://teamnutrition.usda.gov/Resources/nutrientanalysis.html>).*

*For the nutrient analysis of USDA recipes, when there is a choice of ingredients (alternate ingredients), such as frozen corn rather than canned corn, the first ingredient should be used in the nutrient analysis. If the recipes are linked to the corresponding CN-D food item for the nutrient analysis, this rule should be followed on the production recipe that uses “raw” ingredients. The developer may create variations of the recipes that include the alternate ingredients, if not already included in the *USDA Recipes for Schools*. Users should be allowed to copy the USDA recipes and edit the ingredients for variations or optional ingredients to whatever is actually used in the school food service.*

*For the nutrient analysis of USDA recipes, if there are also optional ingredients listed, such as adding raisins to a muffin, they should not be included in the nutrient analysis of the recipe. Optional ingredients that are not included in the nutrient analysis should also not be included on the production recipe. If the recipes are linked to the corresponding CN-D ingredient for the nutrient analysis, these rules should be followed on the production recipe that uses “raw” ingredients. The developer may create variations of the recipes that include the optional ingredients, if not already included in the *USDA Recipes for Schools*.*

### **Frequently Asked Questions about the Voluntarily Added USDA Production Recipes**

1) *May we include the **USDA Recipes for Schools** as a separate recipe database?*

Yes. The *USDA Recipes for Schools* may be included as a separate recipe database or included in the main recipe database for the software program.

- 2) *Are the **USDA Recipes for Schools** available in a downloadable format that we can import into our software program?*

No. At this time, the **USDA Recipes for Schools** are only available in pdf format.

- 3) *Should we include the Food Based Menu Planning (FBMP) crediting (or contributions) for the **USDA Recipes for Schools**?*

Yes. If the developer provides fields for the credit or contribution to FBMP food groups for production recipes, this information as provided by the *USDA Recipes for Schools* should be included. The ingredient amounts listed on the recipe cards (pdf file) must be used for the recipe. The serving size from the recipe card (pdf file) must be used. If the user copies the recipes, the amounts for the crediting contribution or “provides” statement should be removed, requiring the user to check and re-calculate, if necessary, the contributions to the FBMP food groups.

- 4) *What do you mean by “corresponding food in the CN-D”?*

USDA has calculated the nutrient analysis of all the *USDA Recipes for Schools*, along with many of the variations of these recipes. Each recipe has been added to the CN-D as a food item with the nutrients per 100 grams of the prepared recipe. This nutrient analysis is based upon the prepared or “as consumed” recipe. The serving size of the recipe has been added as a Weights file entry for this food item. Developers may choose to link the production recipe to this analysis from the CN-D. Refer to ***Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI*** on the HMRS Web site for more information (<http://healthymeals.nal.usda.gov/software-support.html>).

- 5) *How do I use the spreadsheet of recipe ingredients that accompanies the **Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI**?*

The spreadsheet was created to guide the software developers who link their production recipes for the *USDA Recipes for Schools* to the corresponding analysis of the recipe as a food item in the CN-D. It was also developed to provide examples of “as consumed” ingredients for those software developers who want to enter the *USDA Recipes for Schools* as nutrient analysis recipes or link a production recipe to “as consumed” ingredients. The ingredients and amounts shown are for the “as consumed” product. The software developer may use other similar ingredients, but the nutrient analysis should be very close to duplicating the results on the recipe card.

- 6) *What if an ingredient on the spreadsheet of recipe ingredients that accompanies **Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI** is no longer in the CN-D?*

The software developer may substitute another food item from the CN-D, Database for Standard Reference (SR), or another source, such as a food label. The software developer should try to match the preparation description of the ingredient as closely as possible. Schools should be instructed to copy the *USDA Recipes for Schools* and enter food or ingredient items they actually use if they differ from the listed ingredients.

- 7) *Do we have to use the spreadsheet of recipe ingredients that accompanies **Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI**?*

No. The spreadsheet is meant to be a guide for the software developers to show the types of ingredients that should be used and the adjusted amounts for some ingredients.

- 8) *What if there is no suitable raw ingredient in the CN-D?*

Since the analysis of school meals is to be based upon “as consumed” ingredients and amounts, there is limited data in the CN-D for raw food items that are not typically consumed raw, such as meat, pasta. The software developer may use any suitable raw food item from the local database or another source, such as the SR.

## **Combined Breakfast and Lunch Menu Analysis**

The regulations provide the schools with an optional method of combining the nutrient analyses for breakfast and lunch together for the weighted nutrient analysis. If the software program provides the capability to analyze combined breakfast and lunch menus, the methodology provided by USDA must be used.

USDA developed a methodology for calculating the weighted nutrient analysis for combined breakfast and lunch meals. The worksheet below has been designed to provide a “step by step” approach for calculating a combined breakfast and lunch nutrient analysis on paper. This worksheet can be used by food service personnel using the Nutrient Standard Menu Planning option, who desire one complete and combined analysis of their school breakfast and lunch menus. Software developers who want to include this functionality for their users must use the same methodology. The key components of an accurate calculation require that the nutrient standard and the analyzed nutrient values of a menu for breakfast and lunch are both weighted by the meal participation rates in the National School Lunch Program and School Breakfast Program.

**METHODOLOGY FOR COMBINED BREAKFAST LUNCH ANALYSIS** (use worksheet on pages 84-85)

1. Specify age or grade grouping.
2. Specify breakfast and lunch nutrient standard for the specific age or grade group.
3. Evaluate production and service records to determine meal participation rates (%).
4. Multiply each nutrient standard for breakfast and lunch by meal participation rates.
5. Add the weighted breakfast and lunch nutrient standards for each nutrient.
6. Calculate a weighted nutrient analysis of both menus (breakfast and lunch menus).
7. Multiply each nutrient value for the breakfast and lunch menus by meal participation rates (same participation rates as step 3).
8. Add the weighted nutrient totals for breakfast and lunch menu for each nutrient.
9. Compare the weighted nutrient analysis of a combined breakfast and lunch meal to the weighted nutrient standard for a combined breakfast and lunch analysis.

A Microsoft Excel version of the worksheet is available in the software support section on the Healthy Meals Resource System Web site  
<http://healthymeals.nal.usda.gov/softwaresupport.html>.

WORKSHEET FOR CALCULATING THE NUTRIENT VALUE OF A COMBINED BREAKFAST AND LUNCH USING THE WEIGHTED NUTRIENT ANALYSIS PROCEDURE

1. Specify age/grade grouping\_\_\_\_\_
2. Determine the nutrient standard for the combined breakfast/lunch for the age grouping.

- a. Specify nutrient standard for breakfast and for lunch.

BRKFT	LUNCH		BRKFT	LUNCH
Calories _____	_____	Vitamin A	_____	_____
Protein _____	_____	Vitamin C	_____	_____
Calcium _____	_____	Fat	_____	_____
Iron _____	_____	Sat. Fat	_____	_____

- b. Specify feeding figures for reimbursable meals.

Breakfast\_\_\_\_\_ Lunch\_\_\_\_\_

- c. Evaluate production and service records to determine reimbursable meal participation rates (%).

Breakfast\_\_\_\_\_ %  $B = (B / (B+L)) \times 100$  Lunch\_\_\_\_\_ %  $L = (L / (L+B)) \times 100$

- d. Multiply nutrient standard for breakfast and lunch by meal participation rates.

BREAKFAST			LUNCH		
Calorie _____	X _____	%= _____	Calorie _____	X _____	%= _____
Protein _____	X _____	%= _____	Protein _____	X _____	%= _____
Calcium _____	X _____	%= _____	Calcium _____	X _____	%= _____
Iron _____	X _____	%= _____	Iron _____	X _____	%= _____
Vit. A. _____	X _____	%= _____	Vit. A. _____	X _____	%= _____
Vit. C _____	X _____	%= _____	Vit. C _____	X _____	%= _____
Fat _____	X _____	%= _____	Fat _____	X _____	%= _____
Sat. Fat _____	X _____	%= _____	Sat. Fat _____	X _____	%= _____

- e. Add the weighted breakfast and lunch standard figures for each nutrient to obtain a weighted nutrient standard.

B	L	Total	B	L	Total
Calories _____	+ _____	= _____	Vitamin A. _____	+ _____	= _____
Protein _____	+ _____	= _____	Vitamin C. _____	+ _____	= _____
Calcium _____	+ _____	= _____	Fat _____	+ _____	= _____
Iron _____	+ _____	= _____	Sat. Fat _____	+ _____	= _____

3. Determine the weighted nutrient analysis of a combined breakfast and lunch meal.

a. Perform a computer nutrient analysis of a weighted breakfast and lunch menu.

	BRKFT	LUNCH		BRKFT	LUNCH
Calories	_____	_____	Vitamin A	_____	_____
Protein	_____	_____	Vitamin C	_____	_____
Calcium	_____	_____	Fat	_____	_____
Iron	_____	_____	Sat. Fat	_____	_____

b. Multiply each nutrient value for the breakfast and lunch menu by meal participation rates.

(Same participation rate as step 3)

BREAKFAST			LUNCH		
Calorie	_____ X _____	%= _____	Calorie	_____ X _____	%= _____
Protein	_____ X _____	%= _____	Protein	_____ X _____	%= _____
Calcium	_____ X _____	%= _____	Calcium	_____ X _____	%= _____
Iron	_____ X _____	%= _____	Iron	_____ X _____	%= _____
Vit. A.	_____ X _____	%= _____	Vit. A.	_____ X _____	%= _____
Vit. C	_____ X _____	%= _____	Vit. C	_____ X _____	%= _____
Fat	_____ X _____	%= _____	Fat	_____ X _____	%= _____
Sat. Fat	_____ X _____	%= _____	Sat. Fat	_____ X _____	%= _____

c. Add the weighted breakfast and lunch menu figures for each nutrient to obtain a weighted combined nutrient analysis.

B	L	Total	B	L	Total
Calories	_____ + _____	= _____	Vitamin A.	_____ + _____	= _____
Protein	_____ + _____	= _____	Vitamin C.	_____ + _____	= _____
Calcium	_____ + _____	= _____	Fat	_____ + _____	= _____
Iron	_____ + _____	= _____	Sat. Fat	_____ + _____	= _____

4. Compare the weighted nutrient analysis of a combined breakfast and lunch meal to the weighted nutrient standard for a combined breakfast and lunch. (Totals from 2.e and 3.c)

WEIGHTED NUTRIENT STANDARD	WEIGHTED NUTRIENT ANALYSIS
Calories _____	Calories _____
Protein _____	Protein _____
Calcium _____	Calcium _____
Iron _____	Iron _____
Vitamin A _____	Vitamin A _____
Vitamin C _____	Vitamin C _____
Fat _____	Fat _____
Sat. Fat _____	Sat. Fat _____

## Simple Averaging Function

Simple averaging is a form of weighted nutrient analysis that assigns a feeding figure to the meal and gives each food in a serving group, such as entrée, side, or milk, equal weighting. It is not as precise as the weighted nutrient analysis which uses the planned feeding figure and numbers of servings for each menu item. However, regulations currently allow schools to use simple averaging.

*If the program includes a simple averaging function in which the developer automatically inputs the feeding figure and number of servings of each menu item for the user, this functionality will be checked by the evaluators.*

## Food Based Menu Planning (FBMP) Functions

Approved software programs are specifically developed and approved to support nutrient-based National School Lunch Programs, specifically Nutrient Standard Menu Planning (NSMP). It is also used by State agencies to analyze menus during School Meals Initiative (SMI) reviews of both food-based and nutrient-based programs. Some food-based School Food Authorities (SFAs) use the approved software to ensure that their menus will meet the SMI evaluation when the State agency visits rather than to plan menus using the food-based meal pattern requirements

*The software program must not calculate the credit or contribution amounts for any recipe or menu item for meal pattern requirements for FBMP. Calculation of the credit or contribution of a recipe or menu item to the food groups required by FBMP is a complex task. Methods for completing this task by a software program have not been approved by USDA. SFA's are trained to evaluate ingredient yields and recipes for crediting and may enter this information into the software program.*

### Additional Recommendations:

Include a disclaimer stating that the FBMP components of the program have not been evaluated or approved by USDA. The intent of USDA-approved nutrient analysis software does not include a FBMP component. The software specifications do not include calculating how foods credit toward meal pattern requirements in FBMP. States are required to use the approved software program to check menus of schools using FBMP to determine if menus planned using FBMP meet the nutrient standards. Many schools also use NSMP software as a way to check the nutrient analyses of their FBMP menus. The software specifications do not include a FBMP evaluation process, and are not set up with standards or an evaluation component for crediting foods toward FBMP requirements. However, many developers have added FBMP functionality as a result of their customers' requests.

It is recommended that the program does not attempt to evaluate the FBMP components against the required amounts (meal pattern requirements). There

are some unique aspects of the FBMP requirements that allow schools some flexibility with some of the meal pattern requirements, such as weekly totals for meat/meat alternates. In addition, there are some specific requirements for certain foods within food components that are not applicable to the entire component. Tallying the amounts provided for each food group per day is acceptable.

## ***Evaluation and Approval Process***

*All software programs approved by the United States Department of Agriculture (USDA) for use in implementing Nutrient Standard Menu Planning (NSMP) and in conducting nutrient analyses that meet School Meals Initiative (SMI) requirements must undergo testing and evaluation by the USDA.*

### **Software Evaluation Project**

The primary purpose of the Software Evaluation Project is to conduct the testing and evaluation of commercially available software programs designed for use with school food service. Software programs are submitted voluntarily by the software developers.

The Software Evaluation Project is part of USDA's Food and Nutrition Information Center's (FNIC) Child Nutrition Team and consists of the Software Evaluation Coordinator (SEC) and evaluators from the FNIC staff. The project is funded through an interagency agreement with USDA's Food and Nutrition Service (FNS).

The evaluators, led by the SEC, conduct the evaluations of the software programs approved by USDA for NSMP. The evaluators test and evaluate these commercially available software programs to verify that the specifications and requirements have been met. Before a software program can be approved by USDA, all required functions must be incorporated into and working correctly in the software program. The evaluators also make recommendations for improvements.

The testing and evaluation process for new software programs can take one to two years. Software developers should plan accordingly. The approval process moves faster for developers who consult with the SEC during product development, check the software program prior to submission to be sure the major specifications and requirements have been met, and turn the software program around quickly between evaluations. Evaluations may be delayed when a large number of software programs have been submitted at the same time.

### **Support materials**

Support materials for current and new software developers, including this specifications document, are provided on the Healthy Meals Resource System (HMRS) Web site (<http://healthymeals.nal.usda.gov/software-support.html>).

The SEC is available to answer questions and address concerns as the software developer moves through the evaluation process.

It is required that before submitting a program for evaluation and approval, software developers evaluate their program using the checklist evaluation document available on the HMRS Web site (<http://healthymeals.nal.usda.gov/software-support.html>).

## **Preliminary checklist evaluation**

When the software developer is ready to submit the software program, **the developer first completes the preliminary checklist evaluation using the checklist evaluation document available from the HMRS Web site (<http://healthymeals.nal.usda.gov/software-support.html>)**. The developer must provide written documentation that the preliminary checklist evaluation was completed. The developer must add brief text that points the evaluator to the program functionality that meets each requirement to a copy of the checklist evaluation document.

**After completing the preliminary checklist evaluation on the software program, the software developer sends the completed checklist evaluation form to the software evaluation coordinator.** The developer then makes arrangements to provide the program to the SEC. The software developer is responsible for providing access to the program for all evaluators for all evaluations. The software program may be provided via Web access or a developer-owned laptop. **The evaluators have limited capabilities to install software on their computers. If the developer cannot provide the program by Web access or a developer-owned laptop, the developer must contact the software evaluation coordinator to discuss program installation.** The developer is responsible for shipping costs for all software and hardware sent to and returned from the evaluators.

The SEC or other software evaluator first completes a preliminary checklist evaluation of the software program. The evaluator reviews the program using the checklist evaluation document **provided by the developer**. The purpose of the preliminary checklist evaluation is to determine if the major requirements have been met by the software program before moving into the full evaluation.

If the evaluator determines that the specifications and requirements have not been met, the developer must make corrections and pass the checklist evaluation before continuing through the evaluation process. The time frame for making the corrections is at the discretion of the developer. After the program passes the checklist evaluation, the evaluators will begin the full evaluation.

## **Full evaluation**

After the software program passes the preliminary checklist evaluation, the evaluators begin the full evaluation. At least two evaluators complete the full evaluation of the new program. This evaluation is similar to the checklist evaluation, but it is more comprehensive. The evaluators check the finer details of required functionality with the goal of ensuring an accurate nutrient analysis.

When submitted for the full evaluation, the program must have the current release of the CN Database (CN-D). If the submission for the full evaluation is during the period of transition to the new release of the CN-D, the software developer may submit with the previous release. However, if the approval date is close to the submission date for the new release, the software developer will be asked to submit with the new release before being approved. If the software program is approved with the previous release, the software developer will still need to submit with the new release by the deadline.

After the full evaluation is completed, the developer will be given a list of any final corrections that must be made before the program is approved. The developer makes any remaining corrections and resubmits the program. Usually, the developer must make at least one set of corrections before passing the full evaluation.

## **Final Approval**

After the software program passes the full evaluation, the SEC sends the reports to FNS to request approval of the software program. If the FNS staff concurs with the results of the evaluation, a letter is then issued to the software developer granting approval by USDA for NSMP. This letter will be sent by regular mail; however, the program will be added to the list of approved programs on the HMRS web site, as soon as the letter is signed and the software developer provides the correct contact information.

## **Marketing of Approval Status**

Software developers may not market their program as approved by USDA for NSMP until the letter of approval is signed by FNS staff and the developer has been notified of this signature by the SEC. Developers are discouraged from selling to schools for use with NSMP and SMI requirements until the program is approved. USDA highly recommends that schools do not purchase a software program until it is on the approved software list on the HMRS Web site.

The only marketing language permitted by FNS for both print and electronic product literature is as follows: “USDA-approved for use in implementing Nutrient Standard Menu Planning and in conducting nutrient analyses that meet School Meals Initiative requirements”. The developer may abbreviate Nutrient Standard Menu Planning (NSMP) and School Meals Initiative (SMI), such as “USDA-approved for use with NSMP and SMI”. The developer may also refer to the approval as “approved by USDA for use with NSMP” or “approved by USDA for use with NSMP and SMI.” Please consult with the SEC if you need assistance with acceptable marketing language.

USDA symbols or logos are intended for the official use of the USDA only and must not be used for software marketing materials or websites; logos are expressly excluded from use to imply endorsement of a commercial product or service. The USDA symbol or logo may not be used by anyone outside of USDA without permission. Modified

logos that have the appearance of an endorsement made by the Department are also not permitted.

Please ensure that all product literature for the software program approved by USDA for NSMP is compliant with the marketing language and use of logos requirements.

## **Subsequent Evaluations**

### *CN-D Checks*

All software programs approved by USDA for NSMP must be submitted each time the CN-D is updated, usually annually. Software developers are required to update their program with the most recent CN-D release within 90 days of when the new release is made available. The developer must make arrangements with the SEC to submit or make the software program available for evaluation.

The SEC or other evaluator will conduct a database check evaluation on the approved software program. This is a shorter evaluation that focuses on the correct implementation of the CN-D data from the most recent Release. The evaluator will also spot check the *USDA Recipes for Schools* if these are included in the approved program.

When the approved software program passes the database check evaluation, the SEC sends the reports to the FNS to request re-approval for the software program. If the FNS staff concurs with the results of the evaluation, a letter is then issued to the software developer granting re-approval by USDA for use in implementing NSMP and in conducting nutrient analyses that meet SMI requirements. This letter will be sent by regular mail.

If a program fails to submit the program with the new release of the CN-D by the assigned date, FNS will begin the process of removing the approved software program from the list of approved software programs for the following school year.

### *Resubmission Evaluations*

Each approved program will undergo a longer resubmission evaluation approximately every five years. Scheduling of the resubmission evaluation depends on the number of approved programs, number of new programs currently in progress, **and changes made to the currently approved program**. The SEC will inform the software developer when it is likely that this company's approved program will be evaluated.

It is strongly recommended that before submitting for the resubmission evaluation, the software developer completes the preliminary checklist evaluation using the checklist evaluation document available from the HMRS Web site (<http://healthymeals.nal.usda.gov/software-support.html>).

## **Required Corrections and Compliance**

If the approved software program is found to require corrections, either due to not meeting the specifications and requirements or technical issues, the SEC will inform the software developer and provide a report with details about the required corrections. The software developer has 90 days to make these corrections. The program must be resubmitted to the SEC within the 90 days.

If the corrections still have not successfully completed the required changes, the software developer has an additional 30 days to make these corrections. The software program must be submitted to the SEC within the 30 days.

In some cases, if a good faith effort is being made to make corrections, the SEC and FNS may grant an extension on the submission date.

If the software developer does not comply with the request for corrections or does not submit with corrections, the software program will be removed from the list of approved software programs for the following school year. .

## **Major Changes in the Approved Program**

The software developer must resubmit the software program if there is a significant change in the program, such as a change in platform, operating system, major upgrade, or new program. Examples of significant changes include phasing out an old software program and introducing a new program, change to a Web-based program, and creation of a scaled-down or enhanced program for use by selected customers, modifying a program for use by a specific audience. The SEC will help the software developer determine if the program must be evaluated and re-approved.

## ***Appendix A – Glossary of Terms Used in the Specifications and Functional Requirements Document for Nutrient Standard Menu Planning Software***

**Age/Grade Group** – this refers to the age or grade range for the nutrient standards. The age or grade range may be provided by the U. S. Department of Agriculture (USDA), as it appears in the regulations or may be created by the user with the software program.

**Approval status** – the state of being approved by USDA for use in implementing Nutrient Standard Menu Planning (NSMP) and in conducting nutrient analyses that meet School Meals Initiative for Healthy Children (SMI) requirements.

**Approved by USDA** – shortened term used to refer to the approval of software programs by USDA for use in implementing NSMP and in conducting nutrient analyses that meet SMI requirements. Also referred to as “USDA-approved” or “approved by USDA for NSMP”

**Approved software program** – shortened term used in this document to refer to a software program approved by USDA for use with NSMP.

**Checklist evaluation** – preliminary evaluation conducted on all new software submitted with the intent of obtaining approval by USDA for NSMP. This evaluation is a quick check for implementation of the specifications and requirements.

**Child Nutrition Database (CN-D)** - the database of food items and their nutrient values maintained by USDA for use in the approved software programs.

**Child Nutrition Database Number (CND#)** – the identification number used for food items in the CN-D

**Daily Value** – Term used to refer to the nutrient value used as a target amount of a nutrient by the Food and Drug Administration on the food label

**Developer-added** – Refers to additional data or functionality added to the approved software program by the software developer, such as food items added to the food item or ingredient database or nutrient data added from another source other than the CN-D

**Evaluator** – Person on staff or hired by the Food and Nutrition Information Center (FNIC) to evaluate software programs to determine if the specifications and requirements are met.

**Feeding Figure** – the planned number of reimbursable meals to be served for a menu

**Food item** – Refers to items in the CN-D or program’s local database that includes foods, beverages, condiments, and so forth; refers to the function of maintaining food items in the program’s database that are to be used in recipes and menus

**Food and Nutrition Information Center (FNIC)** – FNIC is the part of USDA which has an interagency agreement with FNS to coordinate the evaluation of the approved software programs.

**Food and Nutrition Service (FNS)** – FNS is the part of USDA which oversees the Child Nutrition Programs (CNP), including the evaluation and approval of software for NSMP.

**Food Based Menu Planning (FBMP)** – FBMP is one of the menu planning systems that schools may use when planning menus for the CNP. FBMP is based upon meal patterns with specific component and quantity requirements met by offering food items from four food components: meat/meat alternate, vegetables and/or fruits, grains/breads, and milk.

**Food label** – refers to the Nutrition Facts panel where nutrient information for a food is displayed to the consumer.

**Full description** – refers to the descriptor field of the Food Description (FDES) file of the CN-D.

**Full evaluation** – refers to the extensive evaluation that all software programs must undergo before they are approved by USDA for NSMP.

**Healthy Meals Resource System (HMRS)** – a collection of resources related to the CNP that is available on the World Wide Web and maintained by USDA’s FNIC.

**Ingredient** –. refers to food items used to create a recipe; sometimes used to refer to the food item database in a software program or foods added to a program.

**Local** – any data added to the program by the user or developer, i.e., data that is not provided by USDA as part of the CN-D.

**Local food items** – food items added by the user or developer.

**Nutrient analysis** – refers to the calculation and display of the amounts of nutrients and other nutritive components, such as calories or ash, present in a food item, ingredient, recipe, or menu.

**Nutrient data** – the information that is available about nutrient content of food items.

**Nutrient standard** – a goal amount of a nutrient; the required amount of a nutrient to be provided to a specific age/grade group.

**Nutrient Standard Menu Planning (NSMP)** – NSMP is one of the menu planning systems that schools may use when planning menus for the CNP. NSMP requires the use of an approved software program to calculate the nutrient analyses of the school’s menus and compare the analyses to a nutrient standard.

**Nutrient value** – amount of a nutrient assigned to a food item.

**Percent Daily Value** – the percent of the Daily Value that is provided in a serving of the food item. Present on the food label as a guide to determine the amount of a nutrient provided in a serving of the food item.

**Production recipe** – a recipe designed for quantity food service, such as in a school setting that lists ingredients using raw ingredients and amounts with instructions for preparation of the recipe; also referred to as a cook’s recipe or quantity recipe.

**Quantity Recipe** - a recipe designed for quantity food service, such as in a school setting, which lists ingredients using raw ingredients and amounts with instructions for preparation of the recipe; also referred to as a production or cook’s recipe.

**Recommended Dietary Allowance (RDA)** – nutrient standard, established by the Food and Nutrition Board, based on the amount of a nutrient needed to prevent a deficiency in a population or group. .

**Resubmission evaluation** – in-depth evaluation of an approved software program that occurs approximately every five years.

**School Meals Initiative** – refers to the School Meals Initiative for Healthy Children (SMI) which is the regulation that updated requirements for the National School Lunch and School Breakfast Programs in 1995. This also refers to State evaluation of School Nutrition Programs which includes nutrient analysis of menus.

**Software developer** – private software company with an approved software program or in the process of creating or modifying software to meet the specifications and requirements for approved software programs.

**Software Evaluation Coordinator (SEC)** – The SEC coordinates and manages the evaluation and approval of the approved software programs.

**Software Evaluation Project** – refers to the entire task of evaluating and approving software programs for NSMP.

**Software program** – refers to programs developed for use with NSMP.

**Specifications document** – refers to this document; refers to the *Specifications and Functional Requirements Document for Nutrient Standard Menu Planning Software*

**United States Department of Agriculture (USDA)** – the branch of the government under which the FNS and FNIC are located; responsible for overseeing the Child Nutrition Programs.

**User** – person who uses the approved software program, usually a school food service director or manager of State agency personnel.

**User-added** – information added by a person who uses the approved software program, not the software developer.

**USDA-approved** – shortened term used to refer to the approval of software programs by USDA for use in implementing NSMP and in conducting nutrient analyses that meet SMI requirements. Also referred to as “USDA-approved” or “approved by USDA for NSMP”

**USDA Recipes for Schools** – a set of production (or cook’s) recipes developed by USDA for use in CNP.

**Weighted nutrient analysis** – method of calculating the nutrient analysis of menus taking into account popularity, or frequency of choice, of menu items.

**Yield** – amount obtained from a recipe; can be a number of servings, such as 50 servings, or a larger quantity, such as “1 gallon” or “1 sheet pan”.

**Yield Factor Method** – method of calculating the nutrient analysis of recipes that requires that each raw recipe ingredient be converted to its ready-to-serve or cooked form and amount.

## **Appendix B - Resources for Developers of Approved Software Programs**

Many of the resources below were referred to within the document *Specifications and Functional Requirements Document for Nutrient Standard Menu Planning Software*. Resources are listed in alphabetical order.

### **Approved Software Programs**

<http://healthymeals.nal.usda.gov/software.html>

This is the list of software programs currently approved by the United States Department of Agriculture (USDA) for use in implementing Nutrient Standard Menu Planning (NSMP) and in conducting nutrient analyses that meet School Meals Initiative (SMI) requirements.

### **Child Nutrition Database**

<http://healthymeals.nal.usda.gov/cndatabase.html>

The Child Nutrition Database (CN-D) is the database required for inclusion in the approved software programs.

### **Child Nutrition Database Contractor**

<http://www.cndatabase.fns.usda.gov/>

Food manufacturers may submit nutrient data for their food products directly to the contractor for inclusion in the next release of the CN-D.

### **Code of Federal Regulations (CFR)**

<http://www.gpoaccess.gov/CFR/>

The regulations for school meals programs, specifically the National School Lunch Program (NSLP) and School Breakfast Program (SBP), are published in the CFR. CFR Title 7 Part 210.10 includes the menu planning regulations for NSLP, while Part 220.8 lists the regulations for SBP. [Search as “7CFR210 and (menu planning)” or “7CFR220 and (menu planning)”]

### **Commodity Foods Web site**

<http://www.fns.usda.gov/fdd/schfacts>

This page provides links to the USDA Commodity Fact Sheets developed for USDA foods (commodities) expected to be available for schools and institutions participating in the NSLP and other Child Nutrition Programs. The Fact Sheets include the nutrient analysis of the commodity food.

**Database for Standard Reference (SR)** – See link for *USDA National Nutrient Database for Standard Reference (SR)* below.

**Food and Drug Administration Web site**

<http://www.fda.gov/food>

The Food section of this Web site provides information about nutrient information required on food labels.

***Food Buying Guide for Child Nutrition Programs***

<http://www.fns.usda.gov/tn/Resources/foodbuyingguide.html>

The *Food Buying Guide for Child Nutrition Programs*, with yield data for more than 1,200 food items, is designed to help 1) determine the right amount of food to buy, and, for the food-based menu planning options, the specific contribution each food makes toward the meal pattern requirements.

**Food Industry Data Submission for the Child Nutrition Database (CN-D)**

<http://www.cndatabase.fns.usda.gov/>

Food manufacturer's who wish to have nutrient data for the products they produce for schools added to the CN-D may submit their data to the Database Contractor at this site.

***Guidelines for Including USDA Production Recipes in USDA-approved Software Programs***

<http://healthymeals.nal.usda.gov/software-support.html>

This document was written to assist software developers who voluntarily add the *USDA Recipes for Schools* as production recipes with ingredients to their software programs. An accompanying spreadsheet, *Ingredients Used in Yield Factor Method Analysis of USDA Recipes for Schools*, is also found at this Web site.

**Healthy Meals Resource System (HMRS)**

<http://healthymeals.nal.usda.gov>

This web site is the primary site used for the Software Evaluation Project. The list of approved software programs, software materials for software developers, and CN-D are found here.

***Menu Planner for Healthy School Meals***

<http://teamnutrition.usda.gov/Resources/menuplanner.html>

The revised Menu Planner introduces the 2005 *Dietary Guidelines for Americans* messages. It also includes valuable information on meeting nutrition goals, the different

menu planning options, nutrient analysis, keeping menu planning records; and marketing the school meals programs in schools

***Moisture and Fat Changes in Recipes*** –

<http://healthymeals.nal.usda.gov/software-support.html>

This document is the original guidance document written to assist software developers with the calculations of nutrient analysis with moisture and fat changes; includes examples.

**Nutrient Analysis Protocols Manual** –

<http://teamnutrition.usda.gov/Resources/nutrientanalysis.html>

The manual ***Nutrient Analysis Protocols: How to Analyze Menus for USDA's School Meals Programs*** is found at this link. This manual provides guidance to the schools and state offices about how to analyze meals according to NSMP requirements.

**Offer versus Serve** –

[http://teamnutrition.usda.gov/Resources/offer\\_v\\_serve.html](http://teamnutrition.usda.gov/Resources/offer_v_serve.html)

***Offer versus Serve*** is a training manual for school districts to use with their schools. It contains training packets for traditional food-based, enhanced food-based, and nutrient standard menu planning.

**Regulations for NSLP and SBP** - See *Code of Federal Regulations* link above.

**Support Materials for Software Developers** –

<http://healthymeals.nal.usda.gov/software-support.html>

This link takes the user to the list of support materials for the software developers developing software programs for NSMP or with approved software programs. The guidance documents ***Moisture and Fat Changes in Recipes*** and ***Guidelines for Including USDA Production Recipes in the Software Programs Approved by USDA for NSMP and SMI*** are found here.

**System Components and File Formats document** –

<http://healthymeals.nal.usda.gov/cndatabase.html>

This document, *Child Nutrition Database, Version CNx: System Components and File Formats*, is updated with each version or release of the CN-D. This document includes information about the files, fields, and data included in the CN-D.

***USDA National Nutrient Database for Standard Reference (SR) -***  
<http://www.ars.usda.gov/ba/bhnrc/ndl>

The Nutrient Data Laboratory (NDL) part of the USDA's Agricultural Research Service has the responsibility to develop USDA's [National Nutrient Database for Standard Reference](#) (SR), the foundation of most food and nutrition databases in the US, used in food policy, research and nutrition monitoring. .The SR is updated annually. .

***USDA Recipes for Schools*** – The *USDA Recipes for Schools* are found at two Web sites:

Team Nutrition –

[http://www.fns.usda.gov/tn/Resources/usda\\_recipes.html](http://www.fns.usda.gov/tn/Resources/usda_recipes.html)

National Food Service Management Institute (NSFMI) –

<http://www.nfsmi.org/ResourceOverview.aspx?ID=115>

The *USDA Recipes for Schools* is the set of production recipes developed by USDA for use in the CNP. Inclusion in the approved software programs is optional.